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Hardwood Suitability for and Properties of Important Midsouth Soils

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SUMMARY

Tables present descriptions and properties of 40 important Midsouth soils and show management suggestions, occurrence, and suitability ratings of species.

Additional keywords: Site index, growth potential.

This paper updates and expands previous information (Broadfoot 1964) about important Midsouth soils and their suitability for hardwoods. Tables 1 through 40 present the description and properties of each soil and show management suggestions, occurrence, and suitability ratings of species. Because many good soils in the Midsouth have been cleared for agriculture, the majority of those included here are poorly drained clays, inaccessible, hilly, or frequently flooded. Species that have commercial timber value, are useful for wildlife, or are considered as forest weeds are included. Often a species that does not occur on a soil is listed when the soil has properties that are similar to those of soils on which the species does occur.

Soil properties were determined by currently accepted standard analytical procedures. Soil series were confirmed or reclassified according to the National Cooperative Soil Survey. Scientists from the Soil Conservation Service were consulted when soil identification was in doubt. The number for the Major Land Resource Area (MLRA) on which each soil occurs is presented in the description of the soil, and the areas are outlined in figure 1. Of the 40 soils, 16 occur primarily in the Southern Mississippi Valley Alluvium, 12 in the Silty Uplands, 9 in the Coastal Plains, and 3 in the Blackland Prairies.

Names of species are according to the Check List of Native and Naturalized Trees of the United States (Little 1953). The information on species is based primarily on observations during the past decade or so and on detailed measurements of more than 700 plots located throughout the Midsouth. Plots were on areas having uniform soil and well-stocked, even-aged stands that showed no evidence of having been cut or burned. Distribution of the soils among the plots was roughly proportional to the present importance of the soils for growing hardwoods.

The full range of height growth of each species was determined through observation of its growth on different soils and different sites. In setting the limits, the influence of local physiography, past use, and incidence of disease and insects were taken into account. The 20-foot range of the site indices is calculated to represent near-virgin site condition. Whether the height of a tree would be nearer the upper or lower end of the range depends upon local moisture conditions, individual stand characteristics, and genetic differences within species. Site index is height at 50 years, except for eastern cottonwood which is height at 30 years.

Site index for some species on some soils was calculated in an additional way. On plots where sweetgum was present, its average height was determined and related by regression to the average heights of species found growing with it (Broadfoot 1970). Thus, on plots where sweetgum and one or more of the other species was present, the site index of those that were not present was estimated.

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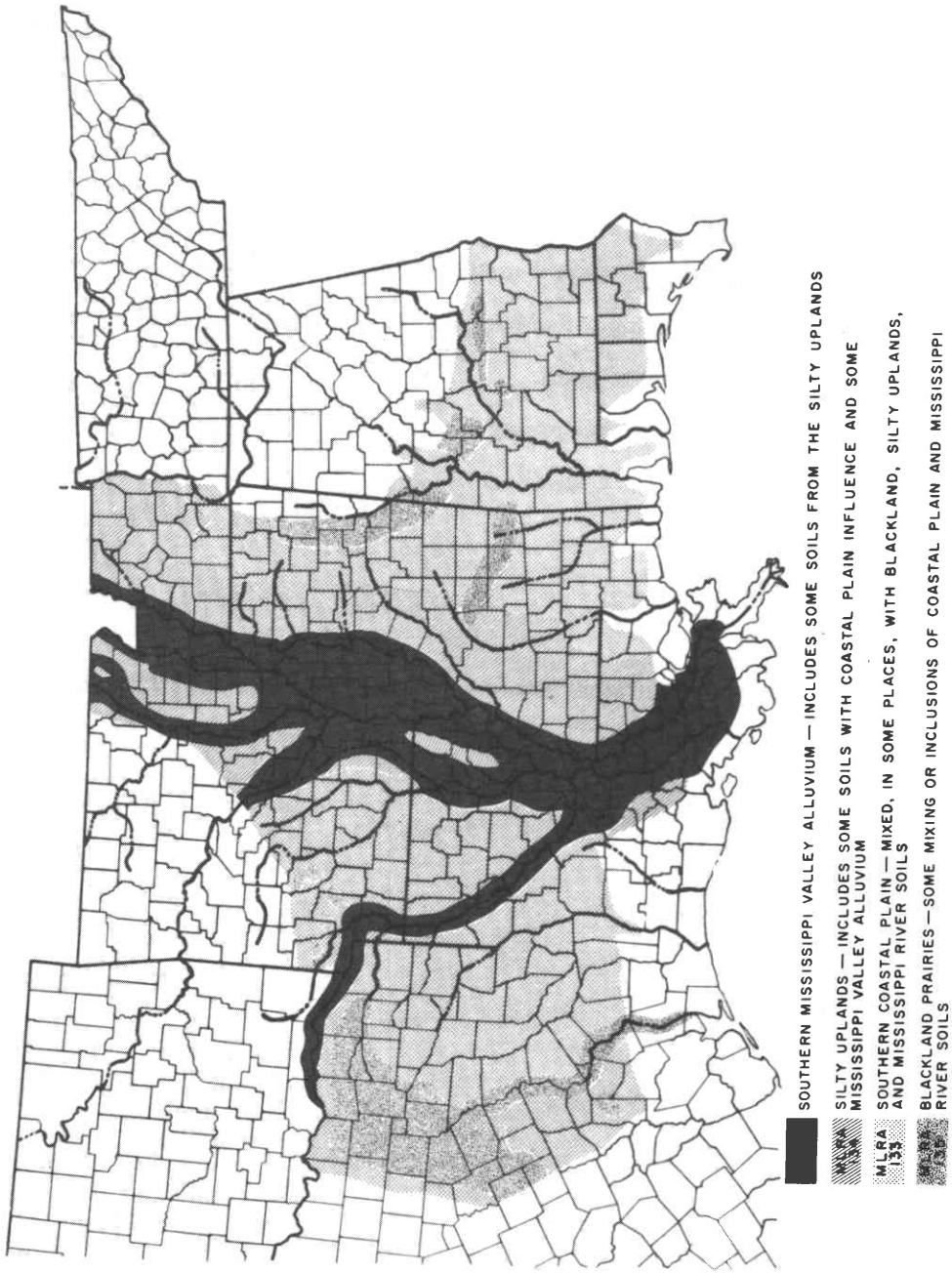
Figure 1.—*General location of the Major Land Resource Areas in the Midsouth where southern hardwoods are grown. The map is adapted from Austin (1965).*



EXPLANATION OF SYMBOLS

A+ Favor in management; suitable for planting; occurs frequently.

B+ Favor in management; occurs frequently.

C+ Manage but do not favor; occurs frequently.

D+ Weed species on this soil; retain if useful for wildlife; occurs frequently.

A Favor in management; suitable for planting; occurs occasionally.

B Favor in management; occurs occasionally.

C Manage, but do not favor; occurs occasionally.

D Weed species on this soil; retain if useful for wildlife; occurs occasionally.

1 Best growth; among the top soil-species combinations for production.

1-2 Growth ranges from best to good.

2 Good productivity with proper management.

2-3 Growth ranges from good to fair.

3 Fair to poor growth.

3-4 Poor to unsuited.

4 Unsuited.

( ) Species is not known to occur naturally on this soil. Suitability rating is by opinion.

Table 1.—*The ADLER series is a member of the coarse-silty, mixed, nonacid, thermic family of Aquic Udifluvents. These soils occur chiefly in narrow to broad floodplains within the Silty Uplands (MLRA-134), on slopes of 0 to 2 percent. They are moderately well drained, with gray mottles beginning at about 16 inches' depth. If surface layers of soil are above pH 7.5, it should be considered unsuitable for planting oaks.*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.0	5.5	6.0	6.3
Phosphorus, extractable	p/m	20	18	17	18
Potassium, extractable	p/m	34	34	30	32
Sodium, extractable	p/m	14	16	18	28
Soluble salts	mmho/cm	6	6	8	7
Organic matter	%/wt	1.20	.72	.86	.70
Cation exchange capacity	me/100 g	8.4	8.8	6.6	6.8
Exchangeable calcium	me/100 g	3.1	4.4	4.0	3.9
Exchangeable magnesium	me/100 g	1.8	2.1	1.6	1.9
Ca:Mg ratio		1.72	2.09	2.50	2.05
Base saturation	%	62	76	86	90
Sand	%/wt	14	20	39	33
Silt	%/wt	72	64	47	53
Clay	%/wt	14	16	14	14
Bulk density	g/cc	1.24	1.42	1.48	1.46
Moisture equivalent	%/vol	25	30	27	28
60-cm moisture	%/vol	38	40	39	37
15-bar moisture	%/vol	8	10	7	8
Usable water after drainage	%/vol	30	30	32	29
Total porosity	%/vol	53	46	44	45
Pore volume for potential drainage and aeration	%/vol	15	6	5	8

Table 1a.—*Species suitability and productivity on ADLER soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	1	105- 85		84
Baldcypress	C	1-2	110- 90		
Birch, river		(2)	85- 65		
Boxelder	C				
Catalpa	C				
Cherry, black	C	2	95- 75		
Chinaberry	C				
Cottonwood, eastern	A	1	130-110		95
Elms, American and slippery	C+	1	95- 75		
Hackberry and sugarberry	B	1	100- 80		
Honeylocust	C	1	95- 75		
Locust, black	C				
Maple, red	C	2	90- 70		
Mulberry	C				
Oak, bur	C				
Oak, cherrybark	B	1-2	115- 95	100	98
Oak, Nuttall	B	1-2	115- 95	114	94
Oak, pin	C				
Oak, water	B	1-2	110- 90		92
Oak, willow	B	1-2	110- 90	94	96
Pecan	B	2	100- 80		
Persimmon, common	C	2	85- 65		
Red cedar, eastern	C				
Sassafras	C	2	95- 75		
Sweetgum	A+	1-2	110- 90	95	
Sycamore, American	A+	1	125-105	110	
Walnut, black	B	1	100- 80	88	
Willow, black	B	2	90- 70		
Yellow-poplar	B	1-2	115- 95	102	

Table 2.—*The ALLIGATOR series is a member of the very fine, montmorillonitic, acid, thermic family of Vertic Haplaquepts. It occurs in slackwater sediments from Mississippi River alluvium. The series consists of poorly drained, fine-textured soil on floodplains and in depressions or old drainageways. The surface layer is gray clay and subsoil is mottled gray clay. Slopes range from 0 to 3 percent (MLRA-131). If waterlogged throughout one or more growing seasons, it is unsuitable for hardwoods. There should be no free water in the surface foot of soil during July, August, or September to obtain productivity within the estimated range*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.1	5.0	5.0	5.5
Phosphorus, extractable	p/m	16	13	11	14
Potassium, extractable	p/m	268	222	218	192
Sodium, extractable	p/m	102	161	236	264
Soluble salts	mmho/cm	33	19	58	112
Organic matter	%/wt	2.63	1.20	1.00	0.77
Cation exchange capacity	me/100 g	42.9	44.7	43.9	36.8
Exchangeable calcium	me/100 g	19.7	19.7	20.6	19.9
Exchangeable magnesium	me/100 g	10.2	12.6	14.5	13.8
Ca:Mg ratio		1.94	1.64	1.48	1.50
Base saturation	%	72.4	75.8	83.9	96.9
Sand	%/wt	12	8	8	9
Silt	%/wt	23	22	22	28
Clay	%/wt	64	70	70	63
Bulk density	g/cc	1.06	1.18	1.20	1.27
Moisture equivalent	%/vol	51	56	55	52
60-cm moisture	%/vol	56	56	55	52
15-bar moisture	%/vol	30	34	34	33
Usable water after drainage	%/vol	26	22	21	19
Total porosity	%/vol	60	56	55	52
Pore volume for potential drainage and aeration	%/vol	4	0	0	0

Table 2a—*Species suitability and productivity on ALLIGATOR soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	2	90- 70	80	79
Baldcypress	B	2	95- 75	88	
Boxelder	C				
Buttonbush	D				
Catalpa	C				
Cottonwood, eastern	A	3	100- 80	92	88
Cottonwood, swamp	C				
Dogwood, roughleaf	D+				
Elms, American and slippery	C+	2	85- 65	74	
Elms, winged and cedar	C	2	75- 55	65	
Hackberry and sugarberry	C+	2-3	85- 65	76	
Hawthorn	D				
Hickories (except water)	C	2-3	80- 60	77	
Hickory, water	C+	2	90- 70	87	
Honeylocust	C+	1-2	90- 70	82	
Maple, red	C	3-4	75- 55	65	
Mulberry	C				
Oak, cherrybark	B	2	100- 80	86	94
Oak, laurel		(1-2)	105- 85		
Oak, Nuttall	A+	2	100- 80	88	89
Oak, overcup	C+	2	85- 65	77	
Oak, Shumard		(3)	95- 75		
Oak, swamp chestnut	C	2-3	85- 65	70	
Oak, swamp post	C	2	85- 65	74	
Oak, water	B+	2	95- 75	83	90
Oak, willow	B+	2	100- 80	88	92
Pecan	C	3	90- 70		
Persimmon, common	C	2-3	80- 60	76	
Redbud	D				
Swamp-privet	D+				
Sweetgum	A+	2-3	95- 75	89	
Sycamore, American	A	3	95- 75		
Tupelo, black and swamp	C	2	85- 65		
Tupelo, water	C+	2	90- 70		
Willow, black	C	2	90- 70	84	
Yellow-poplar		(4)	<65		

Table 3.—*The AMAGON series is a member of the fine-silty, mixed, thermic family of Typic Ochraqualfs. These poorly drained acid soils occur mostly on slopes of 0 to 3 percent within MLRA-131, the Mississippi River floodplain*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.8	5.0	5.1	5.2
Phosphorus, extractable	p/m	9	8	18	23
Potassium, extractable	p/m	138	134	148	97
Sodium, extractable	p/m	48	88	108	119
Soluble salts	mmho/cm	22	12	19	20
Organic matter	%/wt	1.44	.78	.55	.46
Cation exchange capacity	me/100 g	21.8	28.4	25.6	20.4
Exchangeable calcium	me/100 g	9.2	11.8	12.2	10.4
Exchangeable magnesium	me/100 g	3.4	5.8	6.0	5.0
Ca:Mg ratio		2.80	2.07	2.04	2.06
Base saturation	%	60.6	66.0	75.2	80.2
Sand	%/wt	24	22	32	45
Silt	%/wt	42	39	36	28
Clay	%/wt	34	38	32	27
Bulk density	g/cc	1.18	1.24	1.32	1.30
Moisture equivalent	%/vol	35	40	40	31
60-cm moisture	%/vol	40	45	42	40
15-bar moisture	%/vol	19	23	21	16
Usable water after drainage	%/vol	21	22	21	24
Total porosity	%/vol	56	53	50	51
Pore volume for potential drainage and aeration	%/vol	16	8	8	11

Table 3a.—*Species suitability and productivity on AMAGON soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A	2	95- 75		81
Baldcypress	B	2	95- 75		
Basswood, American	C	2	95- 75		
Buttonbush	D				
Cottonwood, eastern	A	2	105- 85		91
Cottonwood, swamp	C				
Elms	C	2	90- 70		
Hackberry and sugarberry	C	2	90- 70		
Hawthorn	D				
Hickories	C	1	95- 75		
Honeylocust	C	2	85-65		
Hophornbeam, eastern	D				
Maple, red		(1-2)	95- 75		
Oak, cherrybark	B+	2	105- 85	94	97
Oak, laurel	B	2	100- 80		
Oak, Nuttall	A	2	105- 85		92
Oak, overcup	B	2	85- 65	70	
Oak, Shumard	B	2	100- 80	89	
Oak, swamp chestnut	B	2	95- 75		
Oak, water	B+	2	100- 80	90	92
Oak, white		(2)	100- 80		
Oak, willow	B+	2	100- 80	90	93
Pecan		(2)	100- 80		
Persimmon, common	C	2	85- 65		
Redbud	D				
Redcedar, eastern	C				
Sassafras	C	3	90- 70		
Swamp-privet	D				
Sweetgum	A+	2	105- 85	92	
Sycamore, American	A	2	110- 90		
Tupelo, black	B	2	90- 70	80	
Tupelo, water	A	2	90- 70		
Willow, black	C	2	90- 70		
Yellow-poplar		(2)	100- 80		

Table 4.—*The ARKABUTLA series is a member of the fine-silty, mixed, acid, thermic family of Aeric Fluvaquents. These somewhat poorly drained soils usually occur on slopes of 0 to 2 percent in floodplains within the Silty Uplands (MLRA-134)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.9	4.9	5.0	5.2
Phosphorus, extractable	p/m	10	8	10	9
Potassium, extractable	p/m	50	34	36	41
Sodium, extractable	p/m	19	30	40	84
Soluble salts	mmho/cm	9	7	7	12
Organic matter	%/wt	1.97	.92	.80	.65
Cation exchange capacity	me/100 g	11.6	10.3	10.2	8.0
Exchangeable calcium	me/100 g	4.57	3.60	3.39	2.32
Exchangeable magnesium	me/100 g	2.12	1.90	1.66	1.20
Ca:Mg ratio		2.20	1.75	1.87	1.74
Base saturation	%	59.0	54.4	49.6	45.2
Sand	%/wt	16	21	20	20
Silt	%/wt	55	53	52	52
Clay	%/wt	28	26	28	28
Bulk density	g/cc	1.21	1.32	1.34	1.37
Moisture equivalent	%/vol	35	33	34	34
60-cm moisture	%/vol	43	42	43	42
15-bar moisture	%/vol	14	12	13	14
Usable water after drainage	%/vol	29	30	30	28
Total porosity	%/vol	54	50	50	49
Pore volume for potential drainage and aeration	%/vol	11	8	7	7

Table 4a.—*Species suitability and productivity on ARKABUTLA soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	1	105- 85	89	83
Baldcypress	C	2	95- 75		
Basswood, American		(2)	95- 75		
Beech, American	C				
Buckeye	D				
Buttonbush, common	D				
Cherry, black	C	2	95- 75		
Cottonwood, eastern	A	1-2	120-100		95
Cottonwood, swamp	C				
Dogwood, flowering	C				
Elderberry	D				
Elms	C+	1	90- 70	77	
Hackberry and sugarberry	C	2-3	80- 60	70	
Hawthorn	D				
Hickories	C+	1-2	95- 75	80	
Holly, American	C				
Honeylocust	C	1	95- 75	85	
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Maple, red	C+	2	90- 70	80	
Mulberry	C				
Oak, cherrybark	B+	1-2	115- 95	96	98
Oak, laurel	B	2	100- 80		
Oak, Nuttall	A	1	120-100	112	93
Oak, overcup	B	1	100- 80	90	
Oak, pin	C				
Oak, Shumard	B	2	110-90		
Oak, swamp chestnut	B+	1-2	100- 80	86	
Oak, water	B+	1-2	110- 90	93	93
Oak, white	B	2	100- 80		
Oak, willow	B+	1-2	110- 90	104	95
Pecan		(2)	100- 80		
Persimmon, common	C	2	85- 65		
Pine, spruce	C				
Redcedar, eastern	C				
Sassafras		(2)	95- 75		
Swamp-privet	D				
Sweetgum	A+	1-2	110- 90	94	
Sycamore, American	A	2	115- 95	105	
Tupelo, black	C	2	85- 65		
Tupelo, swamp	C				
Tupelo, water		(2)	90- 70		
Willow, black	C	2	90- 70	85	
Yellow-poplar	C	2	100- 80		

Table 5.—*The ASKEW series is a member of the fine-silty, mixed, thermic family of Aquic Hapludalfs. These somewhat poorly drained acid soils occur on gently sloping, old natural levees within MLRA-131, the Southern Mississippi Alluvial Valley*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.4	5.2	5.4	5.4
Phosphorus, extractable	p/m	20	35	52	53
Potassium, extractable	p/m	143	101	86	94
Sodium, extractable	p/m	6	18	16	16
Soluble salts	mmho/cm	0	0	0	0
Organic matter	%/wt	2.39	.70	.42	.55
Cation exchange capacity	me/100 g	19.0	15.8	12.5	13.7
Exchangeable calcium	me/100 g	10.95	7.80	6.53	7.95
Exchangeable magnesium	me/100 g	3.20	2.09	1.72	2.21
Ca:Mg ratio		3.42	3.73	3.80	3.60
Base saturation	%	77.9	65.8	69.6	77.4
Sand	%/wt	27	42	45	32
Silt	%/wt	41	33	36	47
Clay	%/wt	32	25	19	21
Bulk density	g/cc	1.32	1.47	1.35	1.38
Moisture equivalent	%/vol	38	35	27	32
60-cm moisture	%/vol	39	36	36	38
15-bar moisture	%/vol	18	15	11	13
Usable water after drainage	%/vol	21	21	25	25
Total porosity	%/vol	50	45	49	48
Pore volume for potential drainage and aeration	%/vol	11	9	13	10

Table 5a.—*Species suitability and productivity on ASKEW soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A	2	90- 70		79
Basswood, American	B	2	95- 75		
Birch, river	C	3	80- 60		
Boxelder	C				
Catalpa	C				
Cherry, black		(2)	95- 75		
Chinaberry	C				
Cottonwood, eastern	A	2	110- 90		89
Dogwood, flowering and roughleaf	D				
Elms	C	1	90- 70		
Hackberry and sugarberry	C	1	100- 80		
Hawthorn	D				
Hickories (except water)	B	1	95- 75		
Honeylocust		(2)	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Maple, red	C	2	90- 70		
Mulberry	C				
Oak, cherrybark	B+	1-2	115- 95	100	93
Oak, laurel	B	1-2	105- 85		
Oak, Nuttall	A	2	110- 90		89
Oak, overcup		(2)	85- 65		
Oak, Shumard	A	1	115- 95		
Oak, swamp chestnut	B	1-2	100- 80		
Oak, water	B+	1-2	110- 90	98	90
Oak, white		(1)	110- 90		
Oak, willow	B+	1-2	110- 90	94	92
Pawpaw	D				
Prickly-ash	D				
Pecan	B	1	105- 85		
Persimmon, common	C	3	75- 55		
Redbud	D				
Sassafras	B	2	95- 75		
Sumac, smooth	D				
Swamp-privet	D				
Sweetgum	A+	1-2	110- 90	90	
Sycamore, American	A	1-2	120-100		
Tupelo, black	C	2	85- 65	70	
Tupelo, water		(2)	90- 70		
Walnut, black	B	2	95- 75		
Yellow-poplar		(2)	100- 80		

Table 6.—*The BRUNO series is a member of the sandy, mixed, thermic family of Typic Udifluvents. These well-drained soils occur in streams and floodplains of the Silty Uplands (MLRA-134) and Mississippi River Alluvium (MLRA-131); slopes do not exceed 5 percent. If located on physiographically dry situations, these soils are not suitable for hardwoods*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.4	5.4	5.4	5.1
Phosphorus, extractable	p/m	2	2	3	2
Potassium, extractable	p/m	28	15	18	21
Sodium, extractable	p/m	21	14	13	15
Soluble salts	mmho/cm	12	10	10	11
Organic matter	%/wt	.95	.78	.55	.55
Cation exchange capacity	me/100 g	3.8	3.6	2.4	2.7
Exchangeable calcium	me/100 g	1.35	1.79	1.26	1.39
Exchangeable magnesium	me/100 g	0.79	0.66	0.32	0.42
Ca:Mg ratio		1.71	2.71	3.94	3.31
Base saturation	%	60.5	69.4	66.7	70.4
Sand	%/wt	57	67	82	78
Silt	%/wt	35	25	14	16
Clay	%/wt	8	8	4	6
Bulk density	g/cc	1.34	1.37	1.40	1.41
Moisture equivalent	%/vol	16	15	10	11
60-cm moisture	%/vol	30	26	20	20
15-bar moisture	%/vol	4	4	4	4
Usable water after drainage	%/vol	26	22	16	16
Total porosity	%/vol	50	48	47	47
Pore volume for potential drainage and aeration	%/vol	20	22	27	27

Table 6a.—*Species suitability and productivity on BRUNO soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	C	3	75- 55		
Basswood, American		(1-2)	100- 80		
Birch, river	C	2	85- 65		
Cherry, black	B	1-2	100- 80	95	
Cottonwood, eastern	A	3	100- 80		
Dogwood, flowering	C				
Elms	C+	2	75- 55		
Hackberry and sugarberry	B	2	90- 70		
Hawthorn	D				
Hickories (except water)	B	2	90- 70		
Holly, American	C				
Honeylocust		(3)	80- 60		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Magnolia, southern	C				
Maple, red and silver	C	3	85- 65		
Mulberry	C				
Oak, cherrybark	B+	1-2	120-100	116	114
Oak, Nuttall		(2)	110- 90		
Oak, overcup		(3)	80- 60		
Oak, Shumard		(2)	110- 90		
Oak, southern red	C				
Oak, swamp chestnut	B	2	95- 75		
Oak, water	B+	1-2	110- 90	100	109
Oak, white	B	2	100- 80		
Oak, willow	B	1-2	110- 90		108
Pecan	B	2	100- 80		
Persimmon, common	C	3	75- 55		
Sassafras	C	2	95-75		
Sumac, smooth	D				
Sweetgum	A+	1-2	120-100	115	
Sycamore, American	A	1-2	125-105	110	
Tupelo, black	C	2	85- 65		
Walnut, black		(2)	95- 75		
Yellow-poplar	B	1	125-105	118	

Table 7.—*The BUXIN series is a member of the fine, mixed, thermic family of Vertic Hapludolls. They are nonacid, poorly drained, and occur in the MLRA-131 where red alluvial sediments overlie gray Mississippi River sediments*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.8	5.9	6.6	6.8
Phosphorus, extractable	p/m	19	19	11	13
Potassium, extractable	p/m	266	216	156	195
Sodium, extractable	p/m	79	136	202	315
Soluble salts	mmho/cm	40	80	58	132
Organic matter	%/wt	3.69	1.65	1.25	.70
Cation exchange capacity	me/100 g	39.4	38.2	28.3	34.9
Exchangeable calcium	me/100 g	23.10	22.20	18.60	21.98
Exchangeable magnesium	me/100 g	10.64	10.64	7.50	9.59
Ca:Mg ratio		2.17	2.09	2.48	2.29
Base saturation	%	88.3	89.0	97.5	97.7
Sand	%/wt	15	12	14	11
Silt	%/wt	26	29	39	26
Clay	%/wt	59	59	47	63
Bulk density	g/cc	1.08	1.20	1.36	1.34
Moisture equivalent	%/vol	45	48	44	54
60-cm moisture	%/vol	51	52	43	50
15-bar moisture	%/vol	31	31	27	34
Usable water after drainage	%/vol	20	21	16	16
Total porosity	%/vol	59	55	49	50
Pore volume for potential drainage and aeration	%/vol	8	3	6	0

Table 7a.—*Species suitability and productivity on BUXIN soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	2-3	85- 65	67	
Baldcypress	C	2	95- 75		
Boxelder	C				
Chittamwood	C				
Cottonwood, eastern	A+	2-3	105- 85		
Dogwood, roughleaf	D				
Elms, American and slippery	C+	2	75- 55		
Hackberry and sugarberry	C+	2	90- 70		
Hickories	C	2	90- 70	82	
Honeylocust	C	1-2	90- 70	82	
Maple, red	C	3	85- 65		
Mulberry	C				
Oak, cherrybark	C	3	95- 75	88	
Oak, Nuttall	C	2-3	95- 75	83	
Oak, overcup	C	2	85- 65		
Oak, Shumard	C	3	95- 75	89	
Oak, swamp chestnut	C	3	85- 65	75	
Oak, water	C	2-3	95- 75		
Oak, willow	C	2-3	95- 75	89	
Osage-orange	C				
Pecan	C	2	100- 80		
Persimmon, common	C	2	85- 65		
Planertree	D				
Swamp-privet	D				
Sweetgum	A	2-3	95- 75		
Sycamore, American	A	2-3	100- 80		
Willow, black	C	2	90- 70		
Yellow-poplar		(3)	85- 65		

Table 8.—*The CALLOWAY series is a member of the fine-silty, mixed, thermic family of Glossaquic Fragiudalfs. These somewhat poorly drained acid soils have a fragipan at 14 to 36 inches. They occur on level topography in the Silty Uplands (MLRA-134)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.9	5.0	5.2	5.2
Phosphorus, extractable	p/m	55	27	17	20
Potassium, extractable	p/m	30	29	90	70
Sodium, extractable	p/m	24	48	176	224
Soluble salts	mmho/cm	12	14	16	23
Organic matter	%/wt	1.29	.35	.38	.21
Cation exchange capacity	me/100 g	7.7	8.1	18.0	17.5
Exchangeable calcium	me/100 g	0.77	0.62	2.66	3.30
Exchangeable magnesium	me/100 g	0.63	0.90	3.61	4.00
Ca:Mg ratio		1.22	0.69	0.74	0.82
Base saturation	%	20.8	23.5	40.0	47.4
Sand	%/wt	15	15	9	10
Silt	%/wt	71	65	62	63
Clay	%/wt	14	20	29	27
Bulk density	g/cc	1.09	1.15	1.15	1.14
Moisture equivalent	%/vol	26	26	34	34
60-cm moisture	%/vol	41	36	40	42
15-bar moisture	%/vol	7	8	17	15
Usable water after drainage	%/vol	34	28	23	27
Total porosity	%/vol	59	57	57	57
Pore volume for potential drainage and aeration	%/vol	18	21	17	15

Table 8a.—*Species suitability and productivity on CALLOWAY soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	C	3	75- 55	68	68
Cottonwood		(4)	<75		
Dogwood, flowering	D				
Elms	C	3	70- 50	60	
Hackberry		(3)	75- 55		
Hawthorn	D				
Hickories (except water)	C+	2	85- 65	80	
Holly, American	C	3			
Honeylocust		(3)	80- 60		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Maple, red	C	3	85- 65		
Oak, blackjack	D				
Oak, cherrybark	B+	3	90- 70	78	84
Oak, Nuttall	A	3	90- 70		76
Oak, overcup		(3)	80- 60		
Oak, post	C				
Oak, Shumard	A	3	90- 70	80	
Oak, southern red	C	3	85- 65	75	
Oak, swamp chestnut		(3)	85- 65		
Oak, water	C	3	85- 65	83	81
Oak, white	C	3	80- 60	70	
Oak, willow	C	3	85- 65		83
Pecan		(3)	90- 70		
Persimmon, common	C	3	75- 55		
Redcedar, eastern	C				
Sweetgum	A+	3	90- 70	76	
Sycamore, American	C	3	85- 65	75	
Tupelo, black	C	3	80- 60	65	
Yellow-poplar	C	3	85- 65	75	

Table 9.—*The CASCILLA series is a member of the fine-silty, mixed, thermic family of Fluventic Dystrochrepts. These well-drained, acid soils occur on high areas bordering old stream channels within the Silty Uplands (MLRA-134). Slopes range from 0 to 2 percent*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.0	4.9	5.0	4.9
Phosphorus, extractable	p/m	5	6	8	10
Potassium, extractable	p/m	92	38	31	31
Sodium, extractable	p/m	16	25	26	22
Soluble salts	mmho/cm	18	23	18	23
Organic matter	%/wt	2.08	1.25	.74	.90
Cation exchange capacity	me/100 g	13.0	8.8	6.5	6.4
Exchangeable calcium	me/100 g	3.81	1.73	1.13	1.25
Exchangeable magnesium	me/100 g	2.35	1.16	0.80	0.74
Ca:Mg ratio		1.62	1.49	1.41	1.69
Base saturation	%	50.0	35.2	33.8	34.4
Sand	%/wt	11	13	14	16
Silt	%/wt	59	62	70	68
Clay	%/wt	30	25	16	16
Bulk density	g/cc	1.08	1.33	1.33	1.34
Moisture equivalent	%/vol	32	37	33	34
60-cm moisture	%/vol	37	44	42	42
15-bar moisture	%/vol	12	10	7	7
Usable water after drainage	%/vol	25	34	35	35
Total porosity	%/vol	59	50	50	50
Pore volume for potential drainage and aeration	%/vol	22	6	8	8

Table 9a.—*Species suitability and productivity on CASCILLA soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A	1-2	100- 80	96	95
Basswood, American	C	2	95- 75		
Beech, American	C				
Birch, river		(2)	85- 65		
Catalpa	C				
Cherry, black	B	2	95- 75		
Cottonwood, eastern	A	1-2	120-110		108
Dogwood, flowering	C				
Elms	C+	2	75- 55		
Hackberry and sugarberry	C	2	90- 70		
Hickories (except water)	C+	1	95- 75		
Holly, American	C				
Honeylocust		(2)	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Magnolia, southern	C				
Maple, red	C	2	90- 70		
Mulberry	C				
Oak, cherrybark	B+	1	125-105	120	110
Oak, laurel		(2)	100- 80		
Oak, Nuttall	A	1-2	115- 95		108
Oak, overcup		(2)	85-65		
Oak, Shumard	A	1	120-100	111	
Oak, southern red	C				
Oak, swamp chestnut	B	1	110- 90	105	
Oak, water	B+	1	115- 95	111	105
Oak, white	B	1	110- 90		
Oak, willow	B	1	115- 95		104
Pecan	C	1	110- 90		
Persimmon, common	C	2	85- 65		
Prickly-ash	D				
Redbud	D				
Redcedar, eastern	C				
Sassafras	C	2	95- 75		
Sumac, smooth	D				
Sweetgum	A+	1	115- 95	110	
Sycamore, American	A	1	125-105		
Tupelo, black	C	2	85- 65		
Tupelo, water		(2)	90- 70		
Walnut, black	C	2	95- 75		
Yellow-poplar	A+	1	125-105	116	

Table 10.—*The CHENNEBY series is a member of the fine-silty, mixed, thermic family of Fluvaquentic Dystrochrepts. These somewhat poorly-drained acid soils occur in floodplains on slopes of 0 to 2 percent within the Coastal Plains and Silty Uplands (MLRA-133, -134)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.1	5.1	5.0	5.0
Phosphorus, extractable	p/m	9	10	13	14
Potassium, extractable	p/m	66	40	35	42
Sodium, extractable	p/m	34	30	42	59
Soluble salts	mmho/cm	11	8	8	9
Organic matter	%/wt	1.70	1.02	.95	.76
Cation exchange capacity	me/100 g	10.2	7.4	6.8	7.4
Exchangeable calcium	me/100 g	3.84	2.08	1.76	1.56
Exchangeable magnesium	me/100 g	2.09	1.33	1.24	1.50
Ca:Mg ratio		1.82	1.54	1.44	1.11
Base saturation	%	60.0	48.3	48.0	44.8
Sand	%/wt	12	14	16	18
Silt	%/wt	64	63	61	60
Clay	%/wt	24	23	23	22
Bulk density	g/cc	1.28	1.36	1.38	1.42
Moisture equivalent	%/vol	33	34	34	34
60-cm moisture	%/vol	40	43	42	40
15-bar moisture	%/vol	12	11	12	12
Usable water after drainage	%/vol	28	32	30	28
Total porosity	%/vol	52	49	48	46
Pore volume for potential drainage and aeration	%/vol	12	6	6	6

Table 10a.—*Species suitability and productivity on CHENNEBY soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	1	100- 80	92	89
Baldcypress		(2)	95- 75		
Basswood, American		(2)	95- 75		
Beech, American	D				
Birch, river	C+	1	90- 70	78	
Boxelder	C	2	75- 55	65	
Buckeye	D				
Cherry, black	C	2	95- 75		
Cottonwood, eastern	A	2	115- 95		100
Dogwood, flowering	C				
Elderberry	D				
Elms	C+	1	95- 75	90	
Hackberry		(2)	90- 70		
Hickories (except water)	B+	1	95- 75		
Holly, American	C	3-4			
Honeylocust		(2)	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D+				
Locust, black	C				
Maple, red	B	1-2	95- 75	80	
Mulberry	C				
Oak, cherrybark	B+	1-2	115- 95	104	103
Oak, laurel		(1-2)	105- 85		
Oak, Nuttall	A	1-2	115- 95	102	101
Oak, overcup		(1)	100- 80		
Oak, post	C				
Oak, Shumard	A	1-2	115- 95	111	
Oak, southern red	C				
Oak, swamp chestnut	B	1-2	100- 80	85	
Oak, water	B+	1	110- 90	102	100
Oak, white	B	1-2	100- 80	88	
Oak, willow	B	1-2	105- 85	93	100
Pecan	B	2	100- 80	90	
Persimmon, common	C	2	85- 65	75	
Redbud	D				
Sassafras	C	2	95- 75		
Sweetgum	A+	1-2	110- 90	102	
Sycamore, American	A	1-2	115- 95	108	
Tupelo, black	C	2	85- 65	70	
Tupelo, water		(2)	90- 70		
Walnut, black		(2)	95- 75		
Willow, black		(2)	90- 70		
Yellow-poplar	A	1-2	115- 95	108	

Table 11.—*The COLLINS series is a member of the coarse-silty, mixed, acid, thermic family of Aquic Udifluvents. Evident bedding planes are characteristic. The series is a moderately well-drained soil formed in silty alluvium on slopes of 0 to 2 percent. The surface layer is brown silt loam. Underlying soil is brown silt loam with gray mottles at about 16 inches' depth. Occurs principally in the bottoms of the Silty Uplands soil area (MLRA-134)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.3	5.2	5.2	5.2
Phosphorus, extractable	p/m	12	14	14	14
Potassium, extractable	p/m	74	59	48	67
Sodium, extractable	p/m	66	62	56	74
Soluble salts	mmho/cm	20	13	13	23
Organic matter	%/wt	1.49	0.93	0.63	0.79
Cation exchange capacity	me/100 g	9.2	8.5	7.4	7.8
Exchangeable calcium	me/100 g	4.13	3.49	2.92	3.05
Exchangeable magnesium	me/100 g	1.66	1.56	1.42	1.62
Ca:Mg ratio		2.52	2.22	1.97	1.77
Base saturation	%	64.8	63.4	61.5	62.4
Sand	%/wt	18	14	14	13
Silt	%/wt	68	72	74	72
Clay	%/wt	13	14	12	15
Bulk density	g/cc	1.14	1.19	1.23	1.25
Moisture equivalent	%/vol	26	26	24	28
60-cm moisture	%/vol	34	37	39	39
15-bar moisture	%/vol	9	9	7	10
Usable water after drainage	%/vol	25	28	32	29
Total porosity	%/vol	57	55	54	53
Pore volume for potential drainage and aeration	%/vol	23	18	15	14

Table 11a.—*Species suitability and productivity on COLLINS soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	1	100- 80	89	94
Baldcypress	C	2	95- 75		
Basswood, American	C	2	95- 75		
Beech, American	C				
Birch, river	C	2	85- 65		
Cherry, black	C	2	95- 75		
Cottonwood, eastern	A	1	125-105	120	108
Cucumbertree	C				
Dogwood, flowering	C				
Elms (except cedar)	B+	1	90- 70		
Hackberry and sugarberry	C	1	100- 80		
Hickories (except water)	C+	1	100- 80		
Holly, American	C				
Honeylocust	C	2	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Magnolia, southern	C				
Maple, red	C	1-2	95- 75		
Mulberry	C				
Oak, cherrybark	B+	1	120-100	113	108
Oak, laurel		(2)	100- 80		
Oak, Nuttall	A	1-2	115- 95	111	107
Oak, overcup		(1)	100- 80		
Oak, Shumard	A	1-2	115- 95	100	
Oak, southern red	C				
Oak, swamp chestnut	B	1-2	100- 80	81	
Oak, water	B+	1	115- 95	108	104
Oak, white	B	1	105- 85		
Oak, willow	B	1	110- 90		103
Pecan	C	1	110- 90		
Persimmon, common	C	2	85- 65		
Pine, spruce	C				
Redbud	D				
Redcedar, eastern	C				
Sassafras	C	2	95- 75		
Sweetgum	A+	1	115- 95	108	
Sycamore, American	A	1	120-100	114	
Tupelo, black	C	2	85- 65		
Tupelo, water		(2)	90- 70		
Walnut, black	B	2	95- 75		
Willow, black		(2)	90- 70		
Yellow-poplar	A	1	120-100	118	

Table 12.—*The COMMERCE series is a member of the fine-silty, mixed, nonacid, thermic family of Aeric Fluvaquents. These soils are somewhat poorly drained and have a dark grayish-brown silt loam or silty clay loam surface and grayish-brown subsoil of the same textural class. They have developed from Mississippi River sediments (MLRA-131). Generally, they occur at high local elevations, on slopes that range from 0 to 5 percent, but some occur in ridge and swale patterns with short irregular slopes. If surface layers are above pH 7.5, it should be considered unsuitable for planting oaks*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	6.9	7.0	7.4	7.5
Phosphorus, extractable	p/m	26	18	14	15
Potassium, extractable	p/m	219	151	116	118
Sodium, extractable	p/m	22	30	28	30
Soluble salts	mmho/cm	13	9	13	16
Organic matter	%/wt	2.67	1.46	1.13	1.08
Cation exchange capacity	me/100 g	25.5	21.0	13.5	12.0
Exchangeable calcium	me/100 g	16.5	15.0	10.2	8.5
Exchangeable magnesium	me/100 g	6.5	5.2	2.8	3.0
Ca:Mg ratio		2.53	2.88	3.64	2.83
Base saturation	%	95	100	100	100
Sand	%/wt	20	19	26	24
Silt	%/wt	43	48	48	49
Clay	%/wt	37	33	26	26
Bulk density	g/cc	1.22	1.31	1.33	1.36
Moisture equivalent	%/vol	37	37	32	33
60-cm moisture	%/vol	42	42	40	42
15-bar moisture	%/vol	19	18	16	17
Usable water after drainage	%/vol	23	24	24	25
Total porosity	%/vol	54	51	50	49
Pore volume for potential drainage and aeration	%/vol	12	9	10	7

Table 12a.—*Species suitability and productivity on COMMERCE soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A	1-2	95-75	80	92
Baldcypress	B	1-2	110- 90		
Boxelder	C+				
Catalpa	C				
Chinaberry	C				
Cottonwood, eastern	A+	1	125-105	105	105
Dogwood, roughleaf	D				
Elms, American and slippery	C+	1	95- 75	80	
Hackberry and sugarberry	B+	1	100- 80	89	
Hawthorn	D				
Hickories		(3)	80- 60		
Honeylocust	C	1	95- 75	80	
Locust, black	C				
Maple, red and silver	B	2	90- 70		
Mulberry	C				
Oak, cherrybark	C	2	110- 90		
Oak, Nuttall	C	2	105- 85		103
Oak, overcup		(2)	85- 65		
Oak, Shumard		(2)	110- 90		
Oak, water	C	2	105- 85	104	104
Oak, swamp chestnut		(2)	95- 75		
Oak, willow	C	2	105- 85		
Osage-orange	C				
Pawpaw	D				
Pecan	B+	1	115- 95	102	
Persimmon, common	C	1-2	85- 65	70	
Sassafras	C	3	90-70		
Swamp-privet	D				
Sweetgum	A+	1	120-100	105	
Sycamore, American	A+	1	120-100	108	
Tupelo, water	C	3	80- 60		
Walnut, black	B	2	95- 75		
Willow, black	B	2	90- 70		
Yellow-poplar		(2)	100- 80		

Table 13.—*The CONVENT series is a member of the coarse-silty, mixed, nonacid, thermic family of Aeric Fluvaquents. These somewhat poorly drained soils occur on slopes of 0 to 5 percent within the Mississippi River floodplain (MLRA-131). If surface layers are above pH 7.5, it should be considered unsuitable for planting oaks*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	7.1	7.1	7.2	7.4
Phosphorus, extractable	p/m	14	7	9	6
Potassium, extractable	p/m	196	116	84	100
Sodium, extractable	p/m	124	112	104	108
Soluble salts	mmho/cm	45	34	34	40
Organic matter	%/wt	1.74	.80	40	.60
Cation exchange capacity	me/100 g	15.3	11.2	8.9	10.3
Exchangeable calcium	me/100 g	11.10	8.63	7.35	9.60
Exchangeable magnesium	me/100 g	3.87	3.93	3.14	3.20
Ca:Mg ratio		2.87	2.20	2.34	3.00
Base saturation	%	100	100	100	100
Sand	%/wt	35	41	51	39
Silt	%/wt	47	45	41	49
Clay	%/wt	18	14	8	12
Bulk density	g/cc	1.16	1.25	1.29	1.26
Moisture equivalent	%/vol	24	21	17	20
60-cm moisture	%/vol	37	38	27	32
15-bar moisture	%/vol	13	10	8	9
Usable water after drainage	%/vol	24	28	19	23
Total porosity	%/vol	56	53	51	52
Pore volume for potential drainage and aeration	%/vol	19	15	24	20

Table 13a.—*Species suitability and productivity on CONVENT soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	1-2	95- 75		95
Baldcypress		(1-2)	110- 90		
Birch, river		(2)	85- 65		
Boxelder	C+				
Catalpa	C				
Chinaberry	C				
Cottonwood, eastern	A+	1	125-105		108
Dogwood, roughleaf	D				
Elms, American and slippery	C+	1	90- 70		
Hackberry and sugarberry	B+	1	100- 80		
Hawthorn	D				
Hickories		(3)	80- 60		
Honeylocust		(1)	95- 75		
Locust, black	C				
Maple, red and silver	B	2	90- 70		
Mulberry	C				
Oak, cherrybark	C	2-3	110- 90		110
Oak, Nuttall	C	2	110- 90		108
Oak, Shumard		(2)	110- 90		
Oak, swamp chestnut		(2)	95- 75		
Oak, water	C	2-3	105- 85		105
Oak, willow	C	2-3	105- 85		104
Osage-orange	C				
Pecan	B+	1	115- 95		
Persimmon, common	C	2	85- 65		
Sassafras	C	2	95- 75		
Swamp-privet	D				
Sweetgum	A+	1	120-100	110	
Sycamore, American	A+	1	130-110	118	
Walnut, black	C	2	95- 75		
Willow, black		(2)	90- 70		
Yellow-poplar		(2)	100- 80		

Table 14.—*The DESHA series is a member of the very fine, mixed, thermic family of Vertic Hapludolls. These somewhat poorly drained nonacid soils occur mainly in backswamp areas of the Mississippi Valley (MLRA-131). They resemble Buxin soils but have more than 60 percent clay in the control section. If surface layers are above pH 7.5, it should be considered unsuitable for planting oaks*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	6.4	7.2	6.9	6.8
Phosphorus, extractable	p/m	13	4	10	7
Potassium, extractable	p/m	372	312	300	228
Sodium, extractable	p/m	256	552	800	700
Soluble salts	mmho/cm	65	191	450	572
Organic matter	%/wt	2.01	.74	.67	.60
Cation exchange capacity	me/100 g	39.7	36.3	34.7	31.2
Exchangeable calcium	me/100 g	21.75	34.72	22.35	17.18
Exchangeable magnesium	me/100 g	12.73	11.41	12.55	12.74
Ca:Mg ratio		1.71	3.04	1.78	1.35
Base saturation	%	90.2	100	100	99.7
Sand	%/wt	2	2	5	10
Silt	%/wt	19	24	27	38
Clay	%/wt	79	74	68	52
Bulk density	g/cc				
Moisture equivalent	%/vol	48	42	39	34
60-cm moisture	%/vol				
15-bar moisture	%/vol	26.0	24.5	23.2	19.9
Usable water after drainage	%/vol				
Total porosity	%/vol				
Pore volume for potential drainage and aeration	%/vol				

Table 14a.—*Species suitability and productivity on DESHA soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	3	80- 60	70	
Baldcypress	C	2	95- 75		
Cottonwood, eastern	A	2-3	100- 80		
Dogwood, roughleaf	D				
Elms, American, cedar, and slippery	C+	3	70- 50		
Hackberry and sugarberry	C	3	75- 55		
Hickory, water	C+	3	75- 55		
Honeylocust	C+	2	85- 65	71	
Maple, red	C	3	85- 65		
Mulberry	C				
Oak, cherrybark	C	3	85- 65		
Oak, Nuttall	C	3	90- 70	70	
Oak, overcup	C	2-3	80- 60	68	
Oak, Shumard		(3)	95- 75		
Oak, water	C	3	85- 65		
Oak, willow	C	3	85- 65		
Osage-orange	C				
Pecan	B	3	90- 70	72	
Persimmon, common	C	3	75- 55		
Planertree	D				
Swamp-privet	D				
Sweetgum	A	3	90- 70		
Sycamore, American	A	3	95- 75		
Willow, black	C	2	90- 70		
Yellow-poplar		(4)	<65		

Table 15.—*The DUNDEE series is a member of the fine-silty, mixed, thermic family of Aeric Ochraqualfs. These soils have a dark grayish-brown loam surface and a dark grayish-brown clay loam subsoil mottled with gray. They are somewhat poorly drained and occur on 0- to 5-percent slopes on natural levees and low terraces in Mississippi River Alluvium (MLRA-131)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.0	5.0	5.2	5.3
Phosphorus, extractable	p/m	23	23	29	33
Potassium, extractable	p/m	151	128	118	95
Sodium, extractable	p/m	38	48	49	61
Soluble salts	mmho/cm	13	10	9	17
Organic matter	%/wt	1.82	0.79	0.57	0.49
Cation exchange capacity	me/100 g	17.0	23.8	23.4	19.8
Exchangeable calcium	me/100 g	7.12	11.92	12.75	11.55
Exchangeable magnesium	me/100 g	2.68	5.06	5.54	5.09
Ca:Mg ratio		2.72	2.40	2.32	2.27
Base saturation	%	60.8	74.8	81.6	88.0
Sand	%/wt	23	22	25	30
Silt	%/wt	43	44	45	45
Clay	%/wt	33	34	30	25
Bulk density	g/cc	1.24	1.34	1.39	1.41
Moisture equivalent	%/vol	36	39	39	37
60-cm moisture	%/vol	43	44	42	42
15-bar moisture	%/vol	18	21	20	17
Usable water after drainage	%/vol	25	23	22	25
Total porosity	%/vol	53	50	48	47
Pore volume for potential drainage and aeration	%/vol	10	6	6	5

Table 15a.—*Species suitability and productivity on DUNDEE soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A	2	90- 70	72	84
Basswood, American	C	2	95- 75		
Birch, river	C	3	80- 60		
Boxelder	C				
Catalpa	C				
Cherry, black		(1-2)	100- 80		
Chinaberry	C				
Cottonwood, eastern	A	2	110- 90		96
Dogwood, flowering and roughleaf	D				
Elms	C+	1-2	90- 70	77	
Hackberry and sugarberry	C	2	90- 70		
Hawthorn	D				
Hickories	C+	1	100- 80		
Honeylocust	C	1-2	90- 70	82	
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Maple, red	C	2	90- 70	76	
Mulberry	C				
Oak, cherrybark	B+	2	110- 90	96	100
Oak, Nuttall	A+	2	105- 85	97	96
Oak, laurel		(2)	100- 80		
Oak, overcup	C	2	85- 65		
Oak, Shumard	A	2	105- 85	96	
Oak, swamp chestnut	B	2	90- 70	80	
Oak, swamp post	C				
Oak, water	B+	2	105- 85	97	97
Oak, white		(2)	100- 80		
Oak, willow	B+	1-2	110- 90	100	97
Pawpaw	D				
Prickly-ash	D				
Pecan	B	2	100- 80	94	
Persimmon, common	C	2	85- 65	75	
Redbud	D				
Sassafras	C	2	95- 75		
Swamp-privet	D				
Sweetgum	A+	2	110- 90	97	
Sycamore	A	2	115- 95	106	
Tupelo, black	C	2	90- 70	82	
Tupelo, water		(2)	90- 70		
Walnut, black	B	3	90- 70		
Yellow-poplar		(2)	100- 80		

Table 16.—*The FALAYA series is a member of the coarse-silty, mixed, acid, thermic family of Aeric Fluvaquents. These somewhat poorly drained soils occur on slopes of 0 to 2 percent within the Silty Uplands (MLRA-134)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.3	5.2	5.1	5.1
Phosphorus, extractable	p/m	12	14	7	5
Potassium, extractable	p/m	59	34	24	24
Sodium, extractable	p/m	48	28	26	44
Soluble salts	mmho/cm	12	7	8	8
Organic matter	%/wt	1.65	1.10	.58	.55
Cation exchange capacity	me/100 g	14.2	8.7	5.3	5.5
Exchangeable calcium	me/100 g	5.18	1.95	0.71	0.35
Exchangeable magnesium	me/100 g	2.48	0.89	0.32	0.20
Ca:Mg ratio		2.09	2.19	2.22	1.75
Base saturation	%	56.3	34.5	22.6	14.5
Sand	%/wt	15	15	14	16
Silt	%/wt	56	64	72	70
Clay	%/wt	29	21	14	14
Bulk density	g/cc	1.12	1.32	1.36	1.28
Moisture equivalent	%/vol	32	34	31	28
60-cm moisture	%/vol	40	44	40	36
15-bar moisture	%/vol	14	12	7	7
Usable water after drainage	%/vo	26	32	33	29
Total porosity	%/vol	58	50	49	52
Pore volume for potential drainage and aeration	%/vol	18	6	9	16

Table 16a.—*Species suitability and productivity on FALAYA soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	1	105- 85		95
Baldcypress	C	2	95- 75		
Basswood, American		(2)	95- 75		
Beech, American	C				
Birch, river		(2)	85- 65		
Buckeye	D				
Buttonbush, common	D				
Cherry, black	C	2	95- 75		
Cottonwood, eastern	A	1-2	120-100		110
Elms	C+	2	75- 55		
Hackberry and sugarberry	C	2	90- 70		
Hawthorn	D				
Hickories	C	2	90- 70		
Holly, American	C				
Honeylocust	C	1	95- 75		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Magnolia, southern	C				
Maple, red	C	2	90- 70		
Mulberry	C				
Oak, cherrybark	B+	1-2	115- 95	108	111
Oak, laurel	B	2	100- 80		
Oak, Nuttall	A	1	115- 95	109	109
Oak, overcup	C	1	100- 80		
Oak, pin	C				
Oak, Shumard	A	2	110- 90		
Oak, swamp chestnut	B	1	110- 90		
Oak, water	B+	1	110- 90	101	107
Oak, white	B	2	100- 80		
Oak, willow	B	1	110- 90	104	104
Pecan		(2)	100- 80		
Persimmon, common	C	2	85- 65		
Pine, spruce	C				
Prickly-ash	D				
Redcedar, eastern	C				
Sassafras		(1-2)	100- 80		
Swamp-privet	D				
Sweetgum	A+	1-2	115- 95	111	
Sycamore, American	A	1-2	120-100		
Tupelo, black	C	2	85- 65		
Tupelo, water		(2)	90- 70		
Walnut, black	C	3	90- 70		
Willow, black	C	2	90- 70		
Yellow-poplar	A	1-2	115- 95		

Table 17.—*The FORESTDALE series is a member of the fine, montmorillonitic, thermic family of Typic Ochraqualfs. This soil has a thin dark grayish-brown silty clay loam surface layer overlying subsoil of light gray silty clay, mottled with yellowish brown. It is poorly drained, strongly acid, and occurs in fine- to moderately fine-textured Mississippi River alluvium (MLRA-131) on slopes of 0 to 3 percent*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.2	5.0	5.1	5.5
Phosphorus, extractable	p/m	27	28	33	33
Potassium, extractable	p/m	184	186	170	139
Sodium, extractable	p/m	38	64	100	99
Soluble salts	mmho/cm	11	7	17	39
Organic matter	%/wt	2.32	0.92	0.61	0.59
Cation exchange capacity	me/100 g	24.9	33.2	30.4	24.4
Exchangeable calcium	me/100 g	10.09	14.59	15.24	13.30
Exchangeable magnesium	me/100 g	4.26	6.45	6.64	5.62
Ca:Mg ratio		2.42	2.27	2.30	2.34
Base saturation	%	62.0	66.3	75.9	82.3
Sand	%/wt	16	13	17	22
Silt	%/wt	38	35	38	43
Clay	%/wt	46	52	45	35
Bulk density	g/cc	1.24	1.29	1.37	1.42
Moisture equivalent	%/vol	42	46	46	43
60-cm moisture	%/vol	45	51	47	44
15-bar moisture	%/vol	23	27	27	24
Usable water after drainage	%/vol	22	24	20	20
Total porosity	%/vol	53	51	48	46
Pore volume for potential drainage and aeration	%/vol	8	0	1	2

Table 17a.—*Species suitability and productivity on FORESTDALE soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	2	90- 70		83
Baldcypress	C	2	95- 75		
Basswood, American	C	2	95- 75		
Buttonbush	D				
Cottonwood, eastern	A	2-3	105- 85		93
Cottonwood, swamp	C				
Dogwood, roughleaf	D				
Elms, American and slippery	C+	2-3	75- 55	65	
Elm, cedar	C				
Elm, winged	C				
Hackberry and sugarberry	C+	2-3	85- 65	75	
Hawthorn	D				
Hickories	B+	2	90- 70	81	
Honeylocust	C	1	95- 75		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Maple, red	C	3	85- 65	70	
Mulberry	C				
Oak, cherrybark	B+	2	105- 85	97	98
Oak, laurel	B	2	100- 80		
Oak, Nuttall	A+	2	100- 80	89	94
Oak, overcup	B+	1-2	95- 75	82	
Oak, Shumard	B	2-3	95- 75		
Oak, swamp chestnut	B	2	95- 75	83	
Oak, swamp post	C				
Oak, water	B+	2	100- 80	90	93
Oak, white		(2)	100- 80	80	
Oak, willow	B+	2	100- 80	94	93
Pawpaw	D				
Pecan	B	2-3	90- 70	85	
Persimmon, common	C	2	85- 65		
Planertree	D				
Prickly-ash	D				
Redbud	D				
Sassafras	C	3	90- 70		
Sumac, smooth	D				
Swamp-privet	D				
Sweetgum	A+	2	105- 85	94	
Sycamore, American	A	2-3	105- 85	100	
Tupelo, black	C	2	85- 65		
Tupelo, water	A	2	90- 70		
Willow, black	C	2	90- 70		
Yellow-poplar	C	3	85- 65		

Table 18.—*The GILLSBURG series is a member of the coarse-silty, mixed, acid, thermic family of the Aeric Fluvaquents. These somewhat poorly drained soils occur mainly on slopes of 0 to 2 percent in stream bottoms and low terraces within the Coastal Plains (MLRA-133) and Silty Uplands (MLRA-134)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.6	5.3	5.2	5.5
Phosphorus, extractable	p/m	13	3	3	8
Potassium, extractable	p/m	70	80	30	37
Sodium, extractable	p/m	48	52	64	124
Soluble salts	mmho/cm	23	16	24	15
Organic matter	%/wt	1.33	.32	.25	.32
Cation exchange capacity	me/100 g	8.0	5.5	3.8	5.5
Exchangeable calcium	me/100 g	2.54	1.23	0.65	0.63
Exchangeable magnesium	me/100 g	1.20	1.03	0.52	0.91
Ca:Mg ratio		2.12	1.19	1.25	0.69
Base saturation	%	50.0	45.5	34.2	32.7
Sand	%/wt	15	17	21	23
Silt	%/wt	67	67	69	63
Clay	%/wt	18	16	10	14
Bulk density	g/cc				
Moisture equivalent	%/vol				
60-cm moisture	%/vol				
15-bar moisture	%/vol				
Usable water after drainage	%/vol				
Total porosity	%/vol				
Pore volume for potential drainage and aeration	%/vol				

Table 18a.—*Species suitability and productivity on GILLSBURG soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	1-2	95- 75	75	84
Baldcypress	C	2	95- 75		
Basswood, American		(1-2)	100- 80		
Beech, American	C				
Birch, river		(1-2)	90- 70		
Cherry, black	C	2	95- 75		
Cottonwood, eastern	A	2	115- 95		95
Dogwood, flowering	C				
Elms	C+	2	75- 55		
Hackberry and sugarberry	C	2	90- 70		
Hickories (except water)	C	1	95- 75		
Honeylocust	C	2	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Magnolia, southern	C				
Maple, red	C	2	90- 70		
Mulberry	C				
Oak, cherrybark	B+	1-2	115- 95	104	99
Oak, laurel		(2)	100- 80		
Oak, Nuttall	A	1	115- 95		94
Oak, overcup	C	2	85- 65		
Oak, Shumard	A	2	110- 90		
Oak, swamp chestnut	B	1	110- 90		
Oak, water	B+	1	115- 95		94
Oak, white	B	1-2	100- 80	85	
Oak, willow	B	1	110- 90		96
Pecan		(2)	100- 80		
Persimmon, common	C	2	85- 65		
Pine, spruce	C				
Prickly-ash	D				
Redbud	D				
Redcedar, eastern	C				
Sassafras	C	2	95- 75		
Swamp-privet	D				
Sweetgum	A+	1-2	110- 90	95	
Sycamore, American	A	2	115- 95		
Tupelo, black	C	2	85- 65		
Tupelo, water		(2)	90- 70		
Willow, black	C	2	90- 70		
Yellow-poplar	A	1-2	115- 95		

Table 19.—*The IUKA series is a member of the coarse-loamy, siliceous, acid, thermic family of Aquic Udifluvents. These moderately well-drained nearly level soils occur on floodplains within the Coastal Plains (MLRA-133)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.9	5.1	5.3	5.2
Phosphorus, extractable	p/m	4	3	4	3
Potassium, extractable	p/m	52	36	34	29
Sodium, extractable	p/m	42	58	50	53
Soluble salts	mmho/cm	15	10	10	10
Organic matter	%/wt	1.51	.93	.61	.62
Cation exchange capacity	me/100 g	5.0	5.6	5.9	6.0
Exchangeable calcium	me/100 g	1.69	2.03	1.92	1.54
Exchangeable magnesium	me/100 g	0.91	0.76	0.82	0.80
Ca:Mg ratio		2.14	3.95	2.51	1.97
Base saturation	%	53.5	53.0	50.0	44.6
Sand	%/wt	32	39	47	48
Silt	%/wt	51	47	40	39
Clay	%/wt	17	14	12	13
Bulk density	g/cc	1.32	1.44	1.50	1.52
Moisture equivalent	%/vol	28	27	21	27
60-cm moisture	%/vol	34	38	33	36
15-bar moisture	%/vol	10	8	7	8
Usable water after drainage	%/vol	24	30	26	28
Total porosity	%/vol	50	46	43	43
Pore volume for potential drainage and aeration	%/vol	16	8	10	7

Table 19a.—*Species suitability and productivity on IUKA soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A	2	95- 75	90	88
Baldcypress	C	3	85- 65		
Basswood, American	C	2	95- 75		
Beech, American	D				
Birch, river	C	2	85- 65		
Boxelder	D				
Buckeye	D				
Cherry, black	C	2	95- 75		
Chinaberry	D				
Cottonwood, eastern	C	2-3	100- 80	96	100
Dogwood, flowering	C				
Elms	C	1	95- 75	94	
Hackberry and sugarberry	C	2-3	85- 65	74	
Hawthorn	D				
Hickories (except water)	B+	1	95- 75		
Holly, American	C				
Honeylocust		(3)	80- 60		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Magnolia, southern	C				
Maple, red	B+	2	90- 70	78	
Mulberry	C				
Oak, cherrybark	B+	1-2	115- 95	101	105
Oak, laurel		(2)	100- 80		
Oak, Nuttall		(2)	110- 90		
Oak, overcup		(3)	80- 60		
Oak, Shumard		(2)	110- 90		
Oak, southern red	C				
Oak, swamp chestnut	B	1-2	100- 80		
Oak, water	B+	2	105- 85	95	100
Oak, white	B	1-2	100- 80	91	
Oak, willow	B	2	105- 85	97	99
Pecan		(2)	100- 80		
Persimmon, common	C	3	75- 55		
Pine, spruce	B				
Prickly-ash	D				
Sassafras	B	1-2	100- 80		
Sweetbay	D				
Sweetgum	A+	1-2	110- 90	102	
Sycamore, American	A	1-2	115- 95	104	
Tupelo, black	B+	1-2	90- 70	76	
Walnut, black		(2)	95- 75		
Yellow-poplar	A	1-2	115- 95	105	

Table 20.—*The JENA series is a member of the coarse-loamy, siliceous, thermic family of Fluventic Dystrochrepts. These acid, well-drained soils occur on slopes of 0 to 3 percent in bottoms within the Coastal Plains (MLRA-133)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.9	4.7	4.6	4.7
Phosphorus, extractable	p/m	4	4	2	3
Potassium, extractable	p/m	92	50	45	34
Sodium, extractable	p/m	20	18	15	18
Soluble salts	mmho/cm	14	8	5	7
Organic matter	%/wt	2.41	.62	.42	.32
Cation exchange capacity	me/100 g	9.2	7.9	8.2	6.3
Exchangeable calcium	me/100 g	1.42	0.49	0.30	0.30
Exchangeable magnesium	me/100 g	0.68	0.44	0.32	0.20
Ca:Mg ratio		2.09	1.11	0.94	1.50
Base saturation	%	26.1	15.2	11.0	11.1
Sand	%/wt	37	39	43	57
Silt	%/wt	45	43	39	27
Clay	%/wt	18	18	18	16
Bulk density	g/cc	1.38	1.58	1.59	1.59
Moisture equivalent	%/vol	33	32	30	24
60-cm moisture	%/vol	38	36	35	30
15-bar moisture	%/vol	11	12	12	10
Usable water after drainage	%/vol	27	24	23	20
Total porosity	%/vol	48	40	40	40
Pore volume for potential drainage and aeration	%/vol	10	4	5	10

Table 20a.—*Species suitability and productivity on JENA soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	C	3	75- 55		
Baldcypress	C	3	85- 65		
Basswood, American	B	2	95- 75	80	
Birch, river	C	2	85- 65		
Cherry, black	B	2	95- 75		
Chinaberry	D				
Cottonwood, eastern	C	3	100- 80		
Dogwood, flowering	C				
Elms	C	2	75- 55		
Hackberry		(2)	90- 70		
Hickories (except water)	B	1	95- 75		
Holly, American	C				
Honeylocust		(2)	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Magnolia, southern	C				
Maple, red	C	2	90- 70		
Oak, cherrybark	B+	1-2	105- 85	87	99
Oak, laurel		(2)	100- 80		
Oak, Nuttall		(2)	110- 90		
Oak, overcup		(3)	80- 60		
Oak, Shumard	A	2	110- 90		
Oak, southern red	C				
Oak, swamp chestnut		(2)	95- 75		
Oak, water	B	2	100- 80	82	94
Oak, white	B	1-2	100- 80		
Oak, willow	B	2	100- 80		96
Pecan		(2)	100- 80		
Sassafras	C	1-2	100- 80		
Sweetbay	D				
Sweetgum	A+	1-2	110- 90	95	
Sycamore, American	A	2	110- 90		
Tupelo, black	B	2	85- 65		
Walnut, black		(2)	95- 75		
Yellow-poplar	A	1-2	115- 95		

Table 21.—*The JOHNSTON series is a member of the coarse-loamy, siliceous, acid, thermic family of Cumulic Humaquepts. These level, poorly drained soils occur on bottoms in the Coastal Plains (MLRA-133). The pedon used to determine the soil properties had less organic matter than the standard description of the soil gives, but species suitability and management needs are similar. If waterlogged for one or more growing seasons, it is not suitable for hardwoods. There should be no free water in the surface foot of soil during July, August, and September to obtain productivity within the estimated range*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.9	4.9	4.7	4.6
Phosphorus, extractable	p/m	6	9	5	1
Potassium, extractable	p/m	20	40	20	32
Sodium, extractable	p/m	64	64	68	64
Soluble salts	mmho/cm	21	24	17	12
Organic matter	%/wt	3.15	3.35	2.88	.80
Cation exchange capacity	me/100 g	8.5	7.4	8.5	6.1
Exchangeable calcium	me/100 g	0.87	0.68	0.42	0.45
Exchangeable magnesium	me/100 g	0.30	0.22	0.22	0.32
Ca:Mg ratio		2.90	3.09	1.91	1.41
Base saturation	%	15.3	13.5	8.2	14.8
Sand	%/wt	49	52	45	44
Silt	%/wt	35	36	35	26
Clay	%/wt	14	10	18	30
Bulk density	g/cc	1.38	1.34	1.36	1.56
Moisture equivalent	%/vol	32	28	31	33
60-cm moisture	%/vol	35	38	37	35
15-bar moisture	%/vol	14	12	15	19
Usable water after drainage	%/vol	21	26	22	16
Total porosity	%/vol	48	50	49	41
Pore volume for potential drainage and aeration	%/vol	13	12	12	6

Table 21a.—*Species suitability and productivity on JOHNSTON soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A	1-2	100- 80		
Baldcypress	B	2	95- 75		
Birch, river		(2)	85- 65		
Buttonbush	D				
Cottonwood		(3)	100- 80		
Dogwood, roughleaf	D				
Elm, American	C	2	75- 55		
Hackberry		(2)	90- 70		
Hawthorn	D				
Hickory, water		(3)	80- 60		
Holly, American	D				
Honeylocust		(2)	85- 65		
Maple, red	B	2	90- 70		
Magnolia, southern	C				
Oak, cherrybark		(2)	110- 90		
Oak, laurel	B	2	100- 80		
Oak, Nuttall		(2)	110- 90		
Oak, overcup	B	2	85- 65		
Oak, swamp chestnut	B	2	100- 80	96	
Oak, water	B+	2	105- 85	103	107
Oak, willow		(3)	85- 65		
Persimmon, common	B	2	85- 65		
Poison-sumac	D				
Planertree	D				
Sweetbay	C+				
Sweetgum	A+	2	110- 90	111	
Sweetleaf, common	C+				
Sycamore, American	B	3	90- 70		
Tupelo, swamp	B+	2	85- 65		
Tupelo, water	A	2	90- 70		
Willow, black	B	2	90- 70		
Yaupon	D				
Yellow-poplar	A+	1-2	115- 95	115	

Table 22.—*The KINSTON series is a member of the fine-loamy, siliceous, acid, thermic family of Typic Fluvaquents. These nearly level, poorly drained soils occur in the Coastal Plains (MLRA-133)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.6	4.6	4.7	4.7
Phosphorus, extractable	p/m	7	4	4	4
Potassium, extractable	p/m	60	52	62	44
Sodium, extractable	p/m	56	64	64	64
Soluble salts	mmho/cm	26	16	12	15
Organic matter	%/wt	2.62	.60	.34	.27
Cation exchange capacity	me/100 g	13.5	11.4	11.2	9.9
Exchangeable calcium	me/100 g	2.12	0.65	0.53	0.33
Exchangeable magnesium	me/100 g	0.79	0.44	0.49	0.49
Ca:Mg ratio		2.68	1.48	1.09	0.67
Base saturation	%	23.7	12.3	11.6	11.1
Sand	%/wt	20	16	25	34
Silt	%/wt	51	58	49	42
Clay	%/wt	29	26	26	24
Bulk density	g/cc	.97	1.41	1.38	1.53
Moisture equivalent	%/vol	27	37	33	32
60-cm moisture	%/vol	36	39	36	35
15-bar moisture	%/vol	13	16	14	14
Usable water after drainage	%/vol	23	23	22	21
Total porosity	%/vol	63	47	48	42
Pore volume for potential drainage and aeration	%/vol	27	8	12	7

Table 22a.—*Species suitability and productivity on KINSTON soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	1	100- 80	90	96
Baldcypress	B	2	95- 75		
Basswood, American	C	3	90- 70		
Birch, river		(2)	85- 65		
Cherry, black	C	3	90- 70		
Cottonwood		(3)	100- 80		
Elms	C+	2	75- 55		
Hackberry		(3)	75- 55		
Hawthorn	D				
Hickories	C+	2	90- 70		
Holly, American	D				
Honeylocust		(2)	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Maple, red	C	2	90- 70		
Oak, cherrybark	B+	2	115- 95	107	112
Oak, laurel		(2)	100- 80		
Oak, Nuttall	A	1-2	115- 95	111	109
Oak, overcup	B	1	100- 80		
Oak, Shumard		(2)	110- 90		
Oak, swamp chestnut	B	1	105- 85	95	
Oak, water	B+	1-2	110- 90		107
Oak, white	B	1-2	100- 80	86	
Oak, willow	B	2	105- 85		104
Pecan		(3)	90- 70		
Persimmon, common	C	2	85- 65		
Sassafras	C	3	90- 70		
Sweetgum	A+	1-2	115- 95	111	
Sycamore, American	B	2-3	105- 85		
Tupelo, black		(1-2)	90- 70		
Tupelo, swamp	C				
Tupelo, water	A	2	85- 65		
Willow, black		(2)	90- 70		
Yellow-poplar	C	2	100- 80		

Table 23.—*The LEEPER series is a member of the fine, montmorillonitic, nonacid, thermic family of Vertic Haplaquepts. These somewhat poorly drained soils occur on nearly level floodplains within the Blacklands (MLRA-135). If surface layers are above pH 7.5, it should be considered unsuitable for planting oaks*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	6.0	5.8	6.2	6.8
Phosphorus, extractable	p/m	20	17	8	8
Potassium, extractable	p/m	159	158	161	164
Sodium, extractable	p/m	84	164	260	288
Soluble salts	mmho/cm	39	30	51	68
Organic matter	%/wt	2.50	1.40	1.00	0.82
Cation exchange capacity	me/100 g	29	30	31	32
Exchangeable calcium	me/100 g	24.9	25.8	28.0	30.0
Exchangeable magnesium	me/100 g	1.5	1.5	1.4	1.2
Ca:Mg ratio		17.7	19.6	23.9	30.4
Base saturation	%	92	93	97	96
Sand	%/ wt	24	21	20	18
Silt	%/wt	35	32	30	32
Clay	%/wt	40	47	50	50
Bulk density	g/cc	1.05	1.08	1.10	1.20
Moisture equivalent	%/vol	36	38	40	43
60-cm moisture	%/vol	42	45	45	45
15-bar moisture	%/vol	20	22	23	24
Usable water after drainage	%/vol	22	23	22	21
Total porosity	%/vol	60	59	58	55
Pore volume for potential drainage and aeration	%/vol	18	14	13	10

Table 23a.—*Species suitability and productivity on LEEPER soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	1	100- 80	88	78
Baldcypress	C	3	85- 65		
Cherry, black	B	2	95- 75		
Cottonwood, eastern	A	2	115- 95		
Dogwood, roughleaf	D				
Elms	B	2	75- 55		
Hackberry and sugarberry	B+	1	95- 75	84	
Hickories (except water)	C	2	90- 70		
Honeylocust	C	1	95- 75		
Locust, black	B				
Maple, red	C	2	90- 70		
Oak, cherrybark	B	2	105- 85	98	92
Oak, Durand	B	2	100- 80	85	
Oak, Nuttall	B	2	110- 90		
Oak, overcup	C	2	85- 65		
Oak, Shumard	B	2	105- 85	93	
Oak, swamp chestnut	B	2	95- 75	86	
Oak, water	B	2	105- 85	93	
Oak, white	B	2	95- 75	92	
Oak, willow	B	2	100- 80		92
Osage-orange	C				
Pecan		(2)	100- 80		
Persimmon, common		(1-2)	85- 65		
Sweetgum	A+	2	105- 85	88	
Sycamore, American	A	2	110- 90		
Walnut, black		(2)	95- 75		
Willow, black		(2)	90- 70		
Yellow-poplar		(2)	100- 80		

Table 24.—*The LEXINGTON series is a member of the fine-silty, mixed, thermic family of Typic Paleudalfs. These well-drained acid soils occur on ridges and slopes of 2 to 17 percent within the Silty Uplands (MLRA-134). Not suitable for hardwoods when eroded. Values apply only to soils with 6 or more inches of topsoil*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.2	4.8	4.9	4.8
Phosphorus, extractable	p/m	4	6	7	6
Potassium, extractable	p/m	218	158	84	60
Sodium, extractable	p/m	11	8	18	12
Soluble salts	mmho/cm	0	0	0	0
Organic matter	%/wt	2.23	.46	.25	.25
Cation exchange capacity	me/100 g	14.0	10.7	8.3	7.0
Exchangeable calcium	me/100 g	6.03	1.83	1.32	1.08
Exchangeable magnesium	me/100 g	3.37	3.04	2.55	1.46
Ca:Mg ratio		1.79	0.60	0.52	0.74
Base saturation	%	72.1	50.5	50.6	40.0
Sand	%/wt	10	13	23	33
Silt	%/wt	65	58	53	45
Clay	%/wt	25	29	24	22
Bulk density	g/cc	1.36	1.56	1.64	1.68
Moisture equivalent	%/vol	35	39	34	32
60-cm moisture	%/vol	39	41	36	33
15-bar moisture	%/vol	15	16	13	11
Usable water after drainage	%/vol	24	25	23	22
Total porosity	%/vol	49	41	38	37
Pore volume for potential drainage and aeration	%/vol	10	0	2	4

Table 24a.—*Species suitability and productivity on LEXINGTON soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, white	C	3-4	80- 60		75
Basswood, American		(1-2)	100- 80		
Cherry, black	C	2	95- 75		
Cottonwood		(4)	<75		
Dogwood, flowering	C				
Elms, American and winged	C	3	80- 60	72	
Hackberry		(3)	75- 55		
Hickories (except water)	C+	2	90- 70		
Holly, American	D				
Honeylocust		(4)	<55		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Maple, red and sugar	C	3	85- 65		
Oak, black	C				
Oak, blackjack	D				
Oak, cherrybark	B+	2	100- 80		93
Oak, chestnut	C				
Oak, chinkapin	C				
Oak, northern red	B				
Oak, Nuttall	C	3	95- 75		89
Oak, overcup		(3)	80- 60		
Oak, post	C				
Oak, scarlet	C				
Oak, Shumard	A	2	105- 85		
Oak, southern red	C+				
Oak, swamp chestnut		(3)	85- 65		
Oak, water	C+	3	90- 70		90
Oak, white	B	2	90- 70		
Oak, willow	C	3	90- 70		91
Pecan		(3)	90- 70		
Persimmon, common	C	3	75- 55		
Redbud	D				
Redcedar, eastern	C				
Sassafras	C	3	90- 70		
Sumac, smooth	D				
Sweetgum	A+	2-3	95- 75	89	
Sycamore, American		(3)	90- 70		
Tupelo, black	C	3	80- 60		
Yellow-poplar	A	2-3	95- 75		

Table 25.—*The MANTACHIE series is a member of the fine-loamy, siliceous, acid, thermic family of Aeric Fluvaquents. These somewhat poorly drained soils occur on gently sloping floodplains within MLRA-133*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.6	4.5	4.5	4.5
Phosphorus, extractable	p/m	7	5	4	3
Potassium, extractable	p/m	44	36	36	44
Sodium, extractable	p/m	28	40	42	68
Soluble salts	mmho/cm	14	10	9	10
Organic matter	%/wt	1.61	.60	.51	.38
Cation exchange capacity	me/100 g	10	10	11	11
Exchangeable calcium	me/100 g	1.8	1.3	1.0	1.0
Exchangeable magnesium	me/100 g	1.3	1.3	1.2	1.3
Ca:Mg ratio		1.7	1.2	1.0	0.9
Base saturation	%	34	28	24	22
Sand	%/wt	36	36	37	37
Silt	%/wt	40	38	36	33
Clay	%/wt	24	26	27	30
Bulk density	g/cc	1.24	1.40	1.39	1.39
Moisture equivalent	%/vol	30	32	32	33
60-cm moisture	%/vol	40	39	38	36
15-bar moisture	%/vol	13	14	14	14
Usable water after drainage	%/vol	27	25	24	22
Total porosity	%/vol	53	47	48	48
Pore volume for potential drainage and aeration	%/vol	13	8	10	12

Table 25a.—*Species suitability and productivity on MANTACHIE soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	2	90- 70	80	82
Baldcypress	C	2	95- 75		
Basswood, American	C	2	95- 75		
Birch, river		(1-2)	90- 70		
Cherry, black	C	2	95- 75		
Cottonwood, eastern	C	3	100- 80		
Dogwood, flowering	C				
Elms	C+	2	90- 70	75	
Hackberry		(2)	90- 70		
Hickories (except water)	B+	1-2	90- 70	79	
Holly, American	C+	3			
Honeylocust		(2)	85- 65		
Hophornbeam, eastern	D+				
Hornbeam, American	D+				
Magnolia, southern	C				
Maple, red	B	2	90- 70	83	
Mulberry	C				
Oak, cherrybark	B+	2	110- 90	96	97
Oak, laurel		(2)	100- 80		
Oak, Nuttall	A	2	105- 85	100	91
Oak, overcup	C	1	95- 75	78	
Oak, Shumard		(2)	110- 90		
Oak, swamp chestnut	B	2	95- 75	82	
Oak, water	B+	2	100- 80	90	92
Oak, white	B	2	90- 70	73	
Oak, willow	B	2	100- 80	88	93
Pecan		(2)	100- 80		
Persimmon, common	C	2	85- 65		
Pine, spruce	B				
Sassafras	B	1-2	100- 80		
Sweetgum	A+	2	105- 85	92	
Sycamore, American	A	2	110- 90	106	
Tupelo, black	C+	2			
Tupelo, swamp	C				
Tupelo, water	A	2	90- 70	78	
Willow, black	C	3	80- 60		
Yellow-poplar	A	2	105- 85		

Table 26.—*The MEMPHIS series is a member of the fine-silty, mixed, thermic family of Typic Hapludalfs. These well-drained acid soils have developed on ridgetops and slopes of less than 17 percent within the Silty Uplands (MLRA-134). Not suitable for hardwoods when eroded. Values apply only to soils with 6 inches or more of topsoil*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.3	5.3	5.3	5.3
Phosphorus, extractable	p/m	23	55	58	62
Potassium, extractable	p/m	38	54	60	60
Sodium, extractable	p/m	18	24	32	41
Soluble salts	mmho/cm	14	8	8	13
Organic matter	%/wt	1.09	.54	.38	.38
Cation exchange capacity	me/100 g	7.0	12.4	15.2	13.4
Exchangeable calcium	me/100 g	3.2	5.6	7.3	6.3
Exchangeable magnesium	me/100 g	1.1	2.2	3.0	3.0
Ca:Mg ratio		2.90	2.54	2.43	2.10
Base saturation	%	64	67	71	73
Sand	%/wt	12	11	10	11
Silt	%/wt	72	65	66	67
Clay	%/wt	16	24	24	22
Bulk density	g/cc	1.28	1.31	1.32	1.37
Moisture equivalent	%/vol	29	34	36	36
60-cm moisture	%/vol	40	40	41	41
15-bar moisture	%/vol	10	15	15	14
Usable water after drainage	%/vol	30	25	26	27
Total porosity	%/vol	52	51	50	48
Pore volume for potential drainage and aeration	%/vol	12	11	9	7

Table 26a.—*Species suitability and productivity on MEMPHIS soils with slopes of less than 17 percent*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, white	C	3	85- 65	79	80
Basswood, American	C	2	95- 75	85	
Cherry, black	C	2	95- 75		
Cottonwood, eastern	C	3	100- 80		
Dogwood, flowering	C				
Elms, American and winged	C	3	80- 60	70	
Hackberry		(3)	75- 55		
Hickories (except water)	C	2	90- 70		
Holly, American	C				
Honeylocust		(3)	80- 60		
Locust, black	C				
Maple, red and sugar	C	3	85- 65		
Oak, black	B				
Oak, blackjack	D				
Oak, cherrybark	B+	2	110- 90	100	95
Oak, chestnut	C				
Oak, chinkapin	C				
Oak, northern red	B				
Oak, Nuttall	C	3	95- 75		90
Oak, overcup		(3)	80- 60		
Oak, post	C				
Oak, scarlet	C				
Oak, Shumard	A	2	110- 90	94	
Oak, southern red	C+				
Oak, swamp chestnut		(3)	85- 65		
Oak, water	C	2-3	95- 75	88	91
Oak, white	B	2	90- 70		
Oak, willow		(3)	85- 65		
Paulownia, royal	C				
Pecan		(2)	100- 80		
Persimmon, common	C	3	75- 55		
Prickly-ash	D				
Redbud	D				
Redcedar, eastern	C				
Sassafras	C	3	85- 65	77	
Sumac, smooth	D				
Sweetgum	A+	2	100- 80	90	
Sycamore, American	C	3	95- 75		
Tupelo, black	C	2	85- 65		
Walnut, black	C	2	95- 75		
Yellow-poplar	A	2	100- 80	91	

Table 27.—*MEMPHIS soils that occur on steep slopes of greater than 17 percent within the Silty Uplands (MLRA-134). Planting is no suggested for any species on this erosive phase if normal procedures are used*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.2	5.0	5.2	5.4
Phosphorus, extractable	p/m	31	42	49	49
Potassium, extractable	p/m	86	68	59	56
Sodium, extractable	p/m	21	27	42	56
Soluble salts	mmho/cm	16	3	8	5
Organic matter	%/wt	1.77	.62	.46	.38
Cation exchange capacity	me/100 g				
Exchangeable calcium	me/100 g				
Exchangeable magnesium	me/100 g				
Ca:Mg ratio					
Base saturation	%				
Sand	%/wt	18	12	13	13
Silt	%/wt	68	67	68	70
Clay	%/wt	14	21	19	17
Bulk density	g/cc	1.38	1.35	1.41	1.42
Moisture equivalent	%/vol	34	36	38	37
60-cm moisture	%/vol	41	40	42	41
15-bar moisture	%/vol	11	14	15	13
Usable water after drainage	%/vol	30	26	27	28
Total porosity	%/vol	48	49	47	46
Pore volume for potential drainage and aeration	%/vol	7	9	5	5

Table 27a.—*Species suitability and productivity on MEMPHIS soils with slopes of greater than 17 percent*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	B	1-2	95- 75		90
Baldcypress		(3-4)	75- 55		
Basswood, American	B	2	100- 80	90	
Beech, American	C				
Cherry, black	B	2	95- 75		
Cottonwood, eastern	B	2	115- 95		100
Cucumbertree	C				
Dogwood, flowering	C				
Elms, American, slippery, and winged	C+	2	90- 70	80	
Hackberry		(2)	90- 70		
Hickories (except water)	C	1			
Holly, American	C				
Honeylocust		(2)	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	B				
Magnolia, southern	C				
Maple, red and sugar	C	3	85- 65		
Mulberry	C				
Oak, black	B				
Oak, cherrybark	B+	1	125-105	113	105
Oak, chinkapin	C				
Oak, northern red	B				
Oak, Nuttall	B	2	115- 95		101
Oak, overcup		(2)	85- 65		
Oak, Shumard	B	1	120-100		
Oak, southern red	B	1-2	110- 90	100	
Oak, swamp chestnut	C	2	100- 80	85	
Oak, water	B	2	105- 85	89	
Oak, white	B+	1	105- 85		
Oak, willow	B	2	105- 85		99
Paulownia, royal	C				
Pecan		(2)	100- 80		
Persimmon, common	C	3	75- 55		
Prickly-ash	D				
Redbud	D				
Sassafras	B	1	100- 80	90	
Sweetgum	B+	1-2	115- 95	102	
Sycamore, American	B	2	115- 95		
Tupelo, black	C	2	85- 65		
Walnut, black	B	2	95- 75		
Yellow-poplar	B+	1	125-105	112	

Table 28.—*The MORGANFIELD series is a member of the coarse-silty, mixed, nonacid, thermic family of Typic Udifluvents. These well-drained soils occur on bottoms within the Silty Uplands (MLRA-134). If surface layers are above pH 7.5, it should be considered unsuitable for planting oaks*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	6.0	6.0	6.3	6.3
Phosphorus, extractable	p/m	11	15	15	18
Potassium, extractable	p/m	52	34	30	30
Sodium, extractable	p/m	17	20	47	36
Soluble salts	mmho/cm	11	8	8	10
Organic matter	%/wt	1.58	.68	.58	.56
Cation exchange capacity	me/100 g	9	9	8	8
Exchangeable calcium	me/100 g	5.8	5.1	4.8	5.3
Exchangeable magnesium	me/100 g	2.4	2.4	2.3	3.1
Ca:Mg ratio		2.5	2.2	2.1	1.8
Base saturation	%	89	88	90	93
Sand	%/wt	12	14	14	16
Silt	%/wt	77	72	73	71
Clay	%/wt	11	14	13	13
Bulk density	g/cc	1.25	1.32	1.33	1.35
Moisture equivalent	%/vol	28	29	28	30
60-cm moisture	%/vol	42	41	40	41
15-bar moisture	%/vol	9	9	8	9
Usable water after drainage	%/vol	33	32	32	32
Total porosity	%/vol	53	50	50	49
Pore volume for potential drainage and aeration	%/vol	11	9	10	8

Table 28a.—*Species suitability and productivity on MORGANFIELD soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A	1	100- 80		95
Baldcypress	B	1-2	110- 90		
Basswood, American		(1-2)	100- 80		
Birch, river		(2)	85- 65		
Boxelder	C	1-2			
Catalpa	C				
Cherry, black	C	2	95- 75		
Chinaberry	C				
Cottonwood, eastern	A	1	130-110	115	112
Elderberry	D				
Elms, American and slippery	C+	1	95- 75	80	
Hackberry and sugarberry	B	1	100- 80		
Hickories		(2)	90- 70		
Honeylocust	C	2	85- 65		
Locust, black	C				
Maple, red and silver	C	2	90- 70		
Mulberry	C				
Oak, bur	B				
Oak, cherrybark	C	1-2	120-100	114	112
Oak, Nuttall	C	2	110- 90	105	
Oak, pin	C				
Oak, water	C	1-2	115- 95	108	107
Oak, willow	C	1-2	115- 95	105	
Pecan	B	1	110- 90		
Persimmon, common	C	2	85- 65		
Redbud	D				
Redcedar, eastern	C				
Sassafras	C	2	95- 75		
Sumac, smooth	D				
Sweetgum	B+	1	120-100	113	
Sycamore, American	A+	1	130-110	122	
Walnut, black	B	1-2	100- 80	80	
Yellow-poplar	A	1-2	125-105	118	

Table 29.—*The NEWELLTON series is a member of the clayey-over-loamy, montmorillonitic, nonacid, thermic family of Aeric Fluvaquents. These somewhat poorly drained soils are found mainly in Mississippi River alluvium within MLRA-131. If surface layers are above pH 7.5, it should be considered unsuitable for oaks*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	6.6	7.4	7.7	7.8
Phosphorus, extractable	p/m	15	9	7	7
Potassium, extractable	p/m	325	170	96	76
Sodium, extractable	p/m	58	54	50	40
Soluble salts	mmho/cm	58	70	60	62
Organic matter	%/wt	3.00	1.15	.95	.78
Cation exchange capacity	me/100 g	33	21	15	15
Exchangeable calcium	me/100 g	22.7	15.8	13.9	16.1
Exchangeable magnesium	me/100 g	7.6	5.7	3.6	2.3
Ca:Mg ratio		3.0	2.8	3.8	7.1
Base saturation	%	95	100	100	100
Sand	%/wt	11	16	22	24
Silt	%/wt	32	53	57	57
Clay	%/wt	57	31	21	19
Bulk density	g/cc	1.06	1.36	1.38	1.33
Moisture equivalent	%/vol	39	38	33	30
60-cm moisture	%/vol	56	44	44	45
15-bar moisture	%/vol	27	21	14	13
Usable water after drainage	%/vol	29	23	30	32
Total porosity	%/vol	60	49	48	50
Pore volume for potential drainage and aeration	%/vol	4	5	4	5

Table 29a.—*Species suitability and productivity on NEWELLTON soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A	2	90- 70		
Baldcypress		(1-2)	110- 90		
Basswood, American		(2)	95- 75		
Boxelder	C+				
Cherry, black		(2)	95- 75		
Cottonwood, eastern	A	1-2	125-105		
Dogwood, roughleaf	D				
Elm, American and slippery	C+	1	90- 70		
Hackberry and sugarberry	C+	1	100- 80		
Hawthorn	D				
Honeylocust	C	1	95- 75		
Maple, red and silver	C	2	90- 70		
Mulberry	C				
Oak, cherrybark	C	2-3	105- 85		
Oak, Nuttall	C	1-2	110- 90		
Oak, overcup		(2)	85- 65		
Oak, Shumard		(2)	110- 90		
Oak, water	C+	2-3	100- 80		
Oak, willow	C+	1-2	105- 85		
Osage-orange	C				
Pecan	B	1	110- 90		
Persimmon, common	C	2	85- 65		
Sassafras		(2)	95- 75		
Sumac, smooth	D				
Swamp-privet	D				
Sweetgum	A+	1-2	110- 90		
Sycamore, American	A	1	130-110	128	
Walnut, black	B	2	95- 75		

Table 30.—*The OCHLOCKONEE series is a member of the coarse-loamy, siliceous, acid, thermic family of Typic Udifluvents. These well-drained soils occur on stream floodplains on slopes of 0 to 2 percent within the Southern Coastal Plain (MLRA-133). If located on physiographically dry situations, these soils are not suitable for hardwoods*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.7	4.8	5.0	5.0
Phosphorus, extractable	p/m	14	13	11	16
Potassium, extractable	p/m	16	36	20	14
Sodium, extractable	p/m	28	46	39	22
Soluble salts	mmho/cm	0	0	0	0
Organic matter	%/wt	.62	.41	.46	.46
Cation exchange capacity	me/100 g	5	6	7	8
Exchangeable calcium	me/100 g	3.1	4.3	5.3	5.5
Exchangeable magnesium	me/100 g	0.4	0.4	0.4	0.4
Ca:Mg ratio		7.4	9.9	12.0	13.1
Base saturation	%	74	82	84	77
Sand	%/wt	82	80	76	69
Silt	%/wt	8	8	12	19
Clay	%/wt	10	12	12	12
Bulk density	g/cc	1.08	1.33	1.23	1.28
Moisture equivalent	%/vol	10	13	15	15
60-cm moisture	%/vol	19	29	30	34
15-bar moisture	%/vol	4	7	7	7
Usable water after drainage	%/vol	15	22	23	27
Total porosity	%/vol	59	50	54	52
Pore volume for potential drainage and aeration	%/vol	40	21	24	18

Table 30a.—*Species suitability and productivity on OCHLOCKONEE soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	C	3	80- 60		
Baldcypress	C	3	85- 65		
Basswood, American		(1-2)	100- 80		
Birch, river	C	1	90- 70	88	
Cherry, black	B	2	95- 75		
Cottonwood, eastern	C	3	100- 80		
Dogwood, flowering	C				
Elms	C+	2	75- 55		
Hackberry and sugarberry	C	2	90- 70		
Hickories (except water)	B	1	100- 80		
Holly, American	C				
Honeylocust		(3)	80- 60		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Maple, red and silver	C	2	90- 70		
Oak, cherrybark	B	1	120-100		112
Oak, Nuttall		(2)	110- 90		
Oak, overcup		(3)	80- 60		
Oak, Shumard	A	1	115- 95		
Oak, southern red	C				
Oak, swamp chestnut		(2)	95- 75		
Oak, water	B+	1-2	110- 90	110	108
Oak, white	B	1	105- 85		
Oak, willow	B	2	105- 85	90	105
Pecan		(2)	100- 80		
Persimmon, common	C	3	75- 55		
Redbud	D				
Sassafras	B	1-2	100- 80		
Sumac, smooth	D				
Sweetgum	A+	1-2	115- 95	112	
Sycamore, American	A	1-2	120-100	115	
Tupelo, black	B	2	85- 65		
Walnut, black	C	2	95- 75		
Yellow-poplar	A	1-2	115- 95		

Table 31.—*The PERRY series is a member of the very fine, montmorillonitic, nonacid, thermic family of Vertic Haplaquepts. The soils have gray clay A and B horizons over reddish-brown IIB horizons at depths of 14 to 36 inches. These poorly drained soils occur on mixed alluvium from the Mississippi, Arkansas, and Red Rivers (MLRA-131). If waterlogged for one or more growing seasons, these soils are not suitable for hardwoods. There should be no free water in the surface foot of soil during parts of July, August, and September to obtain productivity within the estimated range.*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.6	4.8	5.2	6.8
Phosphorus, extractable	p/m	16	18	15	13
Potassium, extractable	p/m	136	158	175	185
Sodium, extractable	p/m	76	60	230	228
Soluble salts	mmho/cm	44	32	95	256
Organic matter	%/wt	2.38	.73	.76	.53
Cation exchange capacity	me/100 g	29	38	44	41
Exchangeable calcium	me/100 g	9.8	13.5	17.0	37.0
Exchangeable magnesium	me/100 g	6.0	11.0	16.4	16.4
Ca:Mg ratio		1.7	1.2	1.1	2.6
Base saturation	%	59	70	95	100
Sand	%/wt	11	6	4	4
Silt	%/wt	39	32	26	32
Clay	%/wt	50	62	70	64
Bulk density	g/cc	1.26	1.21	1.21	1.21
Moisture equivalent	%/vol	44	52	54	54
60-cm moisture	%/vol	44	53	54	54
15-bar moisture	%/vol	26	30	32	30
Usable water after drainage	%/vol	18	23	22	24
Total porosity	%/vol	52	54	54	54
Pore volume for potential drainage and aeration	%/vol	8	1	0	0

Table 31a.—*Species suitability and productivity on PERRY soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	2-3	80- 60	69	
Baldcypress	C	2	95- 75		
Cottonwood, eastern	A	3	95- 75		
Cottonwood, swamp	C				
Dogwood, roughleaf	D				
Elms	C	2	75- 55		
Hackberry and sugarberry	C	3	75- 55	65	
Hawthorn	D				
Hickories	C+	3	75- 55	68	
Honeylocust	C+	2-3	75- 55	67	
Oak, cherrybark	B+	3	90- 70	74	
Oak, laurel		(2)	100- 80		
Oak, Nuttall	A+	2-3	95- 75	81	
Oak, overcup	C+	2	85- 65		
Oak, swamp chestnut	C	3	85- 65	70	
Oak, swamp post	C	2	85- 65	72	
Oak, water	B	2-3	85- 65	69	
Oak, white		(3)	80- 60		
Oak, willow	B+	2-3	90- 70	87	
Pecan	C	3	90- 70		
Persimmon, common	C	3	75- 55		
Planertree	D				
Sumac, smooth	D				
Swamp-privet	D				
Sweetgum	A	3	90- 70		
Sycamore, American	B	3	95- 75		
Tupelo, black		(2)	85- 65		
Tupelo, water		(2)	90- 70		
Willow, black	C	2	90- 70		
Yellow-poplar		(4)	<65		

Table 32.—*The RILLA series is a member of the fine-silty, mixed, thermic family of Typic Hapludalfs. These reddish-brown, well-drained, acid soils occur mainly on gently sloping topography in Arkansas River alluvium within MLRA-131*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.6	4.6	4.6	4.6
Phosphorus, extractable	p/m	18	4	3	9
Potassium, extractable	p/m	50	56	90	45
Sodium, extractable	p/m	32	62	184	196
Soluble salts	mmho/cm	18	12	14	31
Organic matter	%/wt	1.98	.62	.38	.28
Cation exchange capacity	me/100 g	10	13	21	12
Exchangeable calcium	me/100 g	4.2	4.4	6.0	3.4
Exchangeable magnesium	me/100 g	2.5	3.3	5.8	3.4
Ca:Mg ratio		1.7	1.3	1.0	1.0
Base saturation	%	67	65	63	70
Sand	%/wt	31	28	17	34
Silt	%/wt	51	49	48	47
Clay	%/wt	18	23	35	19
Bulk density	g/cc	1.49	1.28	1.32	1.36
Moisture equivalent	%/vol	31	28	38	28
60-cm moisture	%/vol	37	37	45	37
15-bar moisture	%/vol	12	13	22	12
Usable water after drainage	%/vol	25	24	23	25
Total porosity	%/vol	44	52	50	49
Pore volume for potential drainage and aeration	%/vol	7	15	15	12

Table 32a.—*Species suitability and productivity on RILLA soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	C	2-3	85- 65		75
Basswood, American		(1-2)	100- 80		
Birch, river		(1-2)	90- 70		
Cherry, black		(1-2)	100- 80		
Cottonwood, eastern	A	2-3	105- 85		86
Elms	C+	2	85- 65	70	
Hackberry and sugarberry	C	2	90- 70		
Hickories (except water)	C	1	95- 75		
Honeylocust		(3)	80- 60		
Maple, red	C	2	90- 70		
Mulberry	C				
Oak, cherrybark	B+	1-2	110- 90	93	92
Oak, Nuttall	A	2	105- 85		86
Oak, overcup		(3)	80- 60		
Oak, Shumard		(1)	115- 95		
Oak, swamp chestnut	B	2	95- 75	78	
Oak, swamp post	C				
Oak, water	B+	2	100- 80	86	87
Oak, white		(1)	110- 90		
Oak, willow	B+	2	105- 85		91
Pecan	C	2	100- 80		
Persimmon, common	C	3	75- 55		
Sassafras		(1-2)	100- 80		
Swamp-privet	D				
Sweetgum	A+	2	105- 85	85	
Sycamore, American	A	1-2	115- 95		
Tupelo, black		(1-2)	90- 70		
Walnut, black		(1-2)	100- 80		
Yellow-poplar		(2)	100- 80		

Table 33.—*The ROBINSONVILLE series is a member of the coarse-loamy, mixed, nonacid, thermic family of Typic Udifluvents. These well-drained soils are on slopes of 0 to 3 percent in loamy alluvium of the Mississippi River (MLRA-131). If surface layers are above pH 7.5, the soils should be considered unsuitable for planting oaks. If located on physiographically dry situations, these soils are not suitable for hardwoods*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	6.7	6.5	6.4	6.4
Phosphorus, extractable	p/m	24	14	18	19
Potassium, extractable	p/m	232	177	76	64
Sodium, extractable	p/m	18	24	11	6
Soluble salts	mmho/cm	1	0	0	0
Organic matter	%/wt	2.67	1.20	.55	.46
Cation exchange capacity	me/100 g	26	18	10	9
Exchangeable calcium	me/100 g	17.2	11.6	6.4	6.0
Exchangeable magnesium	me/100 g	7.4	4.9	2.5	2.4
Ca:Mg ratio		2.3	2.4	2.6	2.5
Base saturation	%	97	95	98	95
Sand	%/wt	9	38	63	53
Silt	%/wt	51	35	25	37
Clay	%/wt	40	27	12	10
Bulk density	g/cc	1.26	1.38	1.46	1.36
Moisture equivalent	%/vol	40	33	18	16
60-cm moisture	%/vol	42	34	37	38
15-bar moisture	%/vol	19	13	6	5
Usable water after drainage	%/vol	23	21	31	33
Total porosity	%/vol	52	48	45	49
Pore volume for potential drainage and aeration	%/vol	10	14	8	11

Table 33a.—*Species suitability and productivity on ROBINSONVILLE soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	C	2	90- 70		94
Birch, river		(2)	85- 65		
Boxelder	C+	1	75- 55	65	
Cherry, black		(2)	95- 75		
Chinaberry	C				
Cottonwood, eastern	A+	1-2	120-100	110	108
Elms, American and slippery	C+	1-2	90- 70	75	
Hackberry and sugarberry	B+	1	95- 75		
Honeylocust		(3)	80- 60		
Locust, black	C				
Maple, red and silver	C	2	90- 70		
Oak, cherrybark	C	2-3	110- 90		109
Oak, Nuttall	C	2-3	105- 85		
Oak, overcup		(3)	80- 60		
Oak, Shumard		(2)	110- 90		
Oak, water	C	2-3	105- 85		104
Oak, willow	C	2-3	105- 85		103
Osage-orange	C				
Pecan	B	1	115- 95		
Persimmon, common	C	3	75- 55		
Sassafras	C	2	95- 75		
Sweetgum	A	1-2	115- 95	109	
Sycamore, American	A+	1	125-105	115	
Walnut, black	B	2	95- 75		
Yellow-poplar		(2)	100- 80		

Table 34.—*The ROSEBLOOM series is a member of the fine-silty, mixed, acid, thermic family of Typic Fluvaquents. These poorly drained soils occur on flat topography along river bottoms throughout the Silty Uplands (MLRA-134). If waterlogged throughout one or more growing seasons, they are unsuitable for hardwoods. There should be no free water in the surface foot of soil during parts of July, August, and September to obtain productivity within the estimated range*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.9	5.1	5.3	5.6
Phosphorus, extractable	p/m	10	5	4	3
Potassium, extractable	p/m	42	44	27	44
Sodium, extractable	p/m	8	8	66	132
Soluble salts	mmho/cm	8	6	10	20
Organic matter	%/wt	2.44	1.18	.68	.51
Cation exchange capacity	me/100 g	8	7	10	13
Exchangeable calcium	me/100 g	1.7	2.7	3.1	4.7
Exchangeable magnesium	me/100 g	1.0	1.4	2.5	4.0
Ca:Mg ratio		1.6	1.8	1.1	1.1
Base saturation	%	37	61	59	72
Sand	%/wt	17	20	19	18
Silt	%/wt	59	58	52	48
Clay	%/wt	24	22	28	33
Bulk density	g/cc	1.32	1.43	1.41	1.44
Moisture equivalent	%/vol	33	31	32	36
60-cm moisture	%/vol	39	35	35	38
15-bar moisture	%/vol	10	9	12	16
Usable water after drainage	%/vol	29	26	23	22
Total porosity	%/vol	50	46	47	46
Pore volume for potential drainage and aeration	%/vol	11	11	12	8

Table 34a.—*Species suitability and productivity on ROSEBLOOM soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	1	105- 85	93	82
Baldcypress	C	2	95- 75		
Basswood, American		(2)	95- 75		
Buttonbush, common	D				
Cottonwood, Eastern	A	2	110- 90		91
Cottonwood, swamp	C				
Elms	C+	3	80- 60	65	
Hackberry and sugarberry	C	2	90- 70		
Hawthorn	D				
Hickories	C	1-2	90- 70	81	
Honeylocust	C	2	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Maple, red	C	3	85- 65		
Mulberry	C				
Oak, cherrybark	B+	2	105- 85	87	97
Oak, laurel	B	2	105- 85	98	
Oak, Nuttall	B	1-2	105- 85		91
Oak, overcup	C+	1	100- 80		
Oak, Shumard	C	2-3	100- 80	85	
Oak, swamp chestnut	B	2	95- 75	80	
Oak, water	B+	2	105- 85	99	92
Oak, white	C	2	95- 75	84	
Oak, willow	B	2	100- 80	85	94
Pecan		(3)	90- 70		
Persimmon, common	C	2	85- 65		
Redcedar, eastern	C				
Swamp-privet	D				
Sweetgum	A+	2	105- 85	92	
Sycamore, American	A	2-3	100- 80	90	
Tupelo, black	C	2	85- 65		
Tupelo, swamp	C				
Tupelo, water	B	1-2	100- 80		
Willow, black	C	2	90- 70		
Yellow-poplar	C	3	85- 65		

Table 35.—*The SHARKEY series is a member of the very fine, montmorillonitic, nonacid, thermic family of Vertic Haplaquepts. The series consists of poorly drained, very dark grayish-brown clay surface and dark gray, clay subsoil mottled with yellowish-brown. It occurs in depressions and slackwater areas from Mississippi River sediments (MLRA-131). Slopes range from 0 to 3 percent. If surface layers are above pH 7.5, it should be considered unsuitable for planting oaks. If waterlogged throughout one or more growing seasons, it is unsuitable for hardwoods. There should be no free water in the surface foot of soil during parts of July, August, and September to obtain productivity within the estimated range*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.9	6.0	6.4	6.7
Phosphorus, extractable	p/m	25	17	16	15
Potassium, extractable	p/m	280	233	220	213
Sodium, extractable	p/m	114	146	190	214
Soluble salts	mmho/cm	18	18	37	71
Organic matter	%/wt	2.88	1.41	1.10	1.02
Cation exchange capacity	me/100 g	40.6	38.6	40.8	43.2
Exchangeable calcium	me/100 g	26.4	23.7	26.9	30.8
Exchangeable magnesium	me/100 g	8.4	9.0	10.0	11.3
Ca:Mg ratio		3.06	2.68	2.72	2.88
Base saturation	%	87.1	87.5	93.8	99.2
Sand	%/wt	11	8	9	9
Silt	%/wt	24	23	23	24
Clay	%/wt	65	68	68	67
Bulk density	g/cc	1.07	1.16	1.22	1.25
Moisture equivalent	%/vol	50	56	58	59
60-cm moisture	%/vol	54	54	55	54
15-bar moisture	%/vol	30	32	33	33
Usable water after drainage	%/vol	24	22	22	21
Total porosity	%/vol	60	56	54	54
Pore volume for potential drainage and aeration	%/vol	6	2	0	0

Table 35a.—*Species suitability and productivity on SHARKEY soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	2	95- 75	80	78
Baldcypress	C	2	95- 75		
Boxelder	D				
Catalpa	C				
Chinaberry	C				
Coffeetree, Kentucky	C				
Cottonwood, eastern	A	2-3	105- 85	92	88
Cottonwood, swamp	C				
Dogwood, roughleaf	D				
Elms, American, slippery, and cedar	C+	2-3	85- 65	74	
Hackberry and sugarberry	C+	2-3	85- 65	73	
Hawthorn	D				
Hickories (except water)	C	3	80- 60		
Hickory, water	C+	2	85- 65	77	
Honeylocust	C	1-2	90- 70	79	
Locust, black	C				
Maple, red	C+	3	85- 65	72	
Mulberry	C				
Oak, bur	C				
Oak, cherrybark	C	3	95- 75	84	93
Oak, laurel	C	3	85- 65	70	
Oak, Nuttall	A+	2	100- 80	91	92
Oak, overcup	C+	2	85- 65	74	
Oak, swamp post	C				
Oak, swamp chestnut	C	2-3	90- 70	70	
Oak, water	B+	2	100- 80	85	92
Oak, willow	B+	2	105- 85	92	93
Osage-orange	D				
Pecan	C+	2-3	90- 70	80	
Persimmon, common	C	2	85- 65	73	
Planertree	D				
Sassafras	C	3	90- 70		
Swamp-privet	D				
Sweetgum	A+	2	100- 80	88	
Sycamore, American	A	2-3	100- 80	87	
Tupelo, black	C	3	80- 60		
Tupelo, water	C	3	80- 60		
Willow, black	C	2	90- 70	80	
Yellow-poplar		(3)	85- 65		

Table 36.—*The TENSAS series is a member of the fine, montmorillonitic, thermic family of Vertic Ochraqualfs. These somewhat poorly drained acid soils occur mainly on gently sloping land developed from Mississippi River sediments (MLRA-131)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.8	5.1	5.0	5.2
Phosphorus, extractable	p/m	20	20	26	36
Potassium, extractable	p/m	177	152	118	76
Sodium, extractable	p/m	34	38	44	62
Soluble salts	mmho/cm	12	7	7	9
Organic matter	%/wt	2.33	1.00	.62	.44
Cation exchange capacity	me/100 g	28	32	26	19
Exchangeable calcium	me/100 g	10.8	11.7	10.2	7.9
Exchangeable magnesium	me/100 g	4.9	5.4	4.9	4.1
Ca:Mg ratio		2.1	2.2	2.1	2.0
Base saturation	%	58	57	65	70
Sand	%/wt	17	17	30	42
Silt	%/wt	32	34	36	35
Clay	%/wt	51	49	34	23
Bulk density	g/cc	1.12	1.25	1.39	1.40
Moisture equivalent	%/vol	40	44	42	32
60-cm moisture	%/vol	48	46	44	42
15-bar moisture	%/vol	23	26	21	16
Usable water after drainage	%/vol	25	20	23	26
Total porosity	%/vol	58	53	48	47
Pore volume for potential drainage and aeration	%/vol	10	7	4	5

Table 36a.—*Species suitability and productivity on TENSAS soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A+	2	95- 75	78	89
Baldcypress	C	2	95- 75		
Basswood, American		(2)	95- 75		
Boxelder	D				
Chinaberry	C				
Cottonwood, eastern	A	2	110- 90	103	100
Cottonwood, swamp	C				
Dogwood, roughleaf	D				
Elms, American and slippery	C+	2	75- 55		
Elms, cedar, rock, winged	C	2			
Hackberry and sugarberry	C+	2	90- 70		
Hawthorn	D				
Hickories (except water)	C	2	90- 70		
Hickory, water	C	2	85- 65	72	
Holly, American	D				
Honeylocust	C	2	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Maple, red	C	3	85- 65		
Mulberry	C				
Oak, cherrybark	B+	1-2	115- 95	108	104
Oak, laurel		(1-2)	105- 85		
Oak, Nuttall	A+	2	110- 90	98	100
Oak, overcup	C	1	95- 75	80	
Oak, Shumard	A	2	105- 85		
Oak, swamp chestnut	B	2	100- 80		
Oak, water	B+	2	105- 85	97	99
Oak, white		(2)	100- 80		
Oak, willow	B+	2	105- 85	100	99
Pecan	B	2	95- 75	80	
Persimmon, common	C	2	85- 65		
Redbud	D				
Sassafras	C	3	90- 70		
Swamp-privet	D				
Sweetgum	A+	2	110- 90	102	
Sycamore, American	A	2	105- 85	105	
Tupelo, black	C	2	85- 65	70	
Tupelo, water		(2)	90- 70		
Willow, black	C	1-2	100- 80	95	
Yellow-poplar		(3)	85- 65		

Table 37.—*The TUNICA series is a member of the clayey-over-loamy, montmorillonitic, nonacid, thermic family of Vertic Haplaquepts. Depth of loamy materials is about 30 inches. These poorly drained, clay soils occur on slopes of 0 to 3 percent along the Mississippi River bottoms (MLRA-131). If surface layers are above pH 7.5, the soil should be considered unsuitable for oaks*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.6	5.8	6.0	6.1
Phosphorus, extractable	p/m	24	24	22	23
Potassium, extractable	p/m	270	180	138	92
Sodium, extractable	p/m	65	66	60	59
Soluble salts	mmho/cm	20	14	15	14
Organic matter	%/wt	2.93	1.69	.78	.62
Cation exchange capacity	me/100 g	39.7	35.2	30.2	20.0
Exchangeable calcium	me/100 g	22.2	19.6	16.8	12.0
Exchangeable magnesium	me/100 g	7.9	8.0	7.6	4.8
Ca:Mg ratio		2.81	2.45	2.21	2.50
Base saturation	%	78	80	83	88
Sand	%/wt	15	16	17	23
Silt	%/wt	27	30	41	50
Clay	%/wt	58	53	42	27
Bulk density	g/cc	1.10	1.26	1.34	1.33
Moisture equivalent	%/vol	48	49	46	36
60-cm moisture	%/vol	51	50	44	41
15-bar moisture	%/vol	30	29	26	19
Usable water after drainage	%/vol	21	21	18	22
Total porosity	%/vol	58	52	50	50
Pore volume for potential drainage and aeration	%/vol	7	2	6	9

Table 37a.—*Species suitability and productivity on TUNICA soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green	A	2	90- 70		77
Boxelder	C				
Catalpa	C				
Chinaberry	C				
Cottonwood, eastern	A	2	110- 90		87
Dogwood, roughleaf	D				
Elms, American and slippery	C+	2	75- 55		
Elms, cedar and winged	C	2			
Hackberry and sugarberry	C	2	90- 70		
Hawthorn	D				
Hickories		(3)	80- 60		
Honeylocust	C	2	85- 65	70	
Locust, black	C				
Maple, red	C	2	90- 70	80	
Mulberry	C				
Oak, bur	C				
Oak, cherrybark	B	2	105- 85	96	93
Oak, Nuttall	A+	1-2	110- 90	98	86
Oak, overcup	C	2	85- 65		
Oak, Shumard	C	2	110- 90		
Oak, swamp chestnut	C	2	95- 75		
Oak, water	B+	2	100- 80	88	89
Oak, willow	B+	2	100- 80	90	88
Osage-orange	C				
Pecan	C	2	100- 80		
Persimmon, common	C	2	85- 65		
Redbud	D				
Sassafras	C	3	90- 70		
Sumac, smooth	D				
Swamp-privet	D				
Sweetgum	A+	2	105- 85	86	
Sycamore, American	A	2	110- 90		
Tupelo, black	C	3	80- 60		
Tupelo, water	C	3	80- 60		
Willow, black	C	2	90- 70		
Yellow-poplar		(3)	85- 65		

Table 38.—*The UNA series is a member of the fine, mixed, acid, thermic family of Typic Haplaquepts. These poorly drained soils occur on level land along streams and rivers within the Blackland Prairies (MLRA-135) and Coastal Plain (MLRA-133). If waterlogged throughout one or more growing seasons, they are unsuitable for hardwoods. There should be no free water in the surface foot of soil during parts of July, August, and September to obtain productivity within the estimated range.*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	4.0	4.1	3.6	4.4
Phosphorus, extractable	p/m	4	2	Tr	Tr
Potassium, extractable	p/m	34	21	28	34
Sodium, extractable	p/m	20	24	69	106
Soluable salts	mmho/cm	11	2	10	20
Organic matter	%/wt	2.08	.74	.55	.42
Cation exchange capacity	me/100 g	15	12	14	18
Exchangeable calcium	me/100 g	2.2	0.7	2.0	3.2
Exchangeable magnesium	me/100 g	1.0	0.7	1.8	3.1
Ca:Mg ratio		2.2	0.9	1.1	1.0
Base saturation	%	23	13	30	40
Sand	%/wt	26	29	26	23
Silt	%/wt	39	34	35	32
Clay	%/wt	35	37	39	45
Bulk density	g/cc	.92	1.44	1.06	1.17
Moisture equivalent	%/vol	24	33	26	32
60-cm moisture	%/vol	54	46	50	50
15-bar moisture	%/vol	13	16	14	18
Usable water after drainage	%/vol	41	30	36	32
Total porosity	%/vol	65	46	60	54
Pore volume for potential drainage and aeration	%/vol	11	0	10	4

Table 38a.—*Species suitability and productivity on UNA soils.*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	2-3	85- 65	68	76
Baldcypress		(2)	95- 75		
Buttonbush	D				
Cottonwood, eastern	B	3	95- 75		85
Elms	C	2	75- 55		
Hackberry and sugarberry	C	3	75- 55		
Hickories	C+	2	90- 70		
Holly, American	D				
Honeylocust	C	2	85- 65		
Maple, red	C	3	85- 65		
Oak, cherrybark	B	2	100- 80	86	91
Oak, laurel	B	2	100- 80		
Oak, Nuttall	A	2	105- 85		86
Oak, overcup	B	2	85- 65		
Oak, Shumard		(2)	110- 90		
Oak, swamp chestnut	B	2-3	90- 70		
Oak, water	B+	2	100- 80	84	88
Oak, white		(2)	100- 80		
Oak, willow	B+	2	100- 80	82	90
Pecan		(3)	90- 70		
Planertree	D				
Swamp-privet	D+				
Sweetbay	C				
Sweetgum	A+	2	100- 80	85	
Sycamore, American	C	3	90- 70		
Tupelo, black		(2)	85- 65		
Tupelo, swamp	C	2	85- 65		
Tupelo, water	A	2	90- 70		
Willow, black		(2)	90- 70		
Yellow-poplar		(3)	85- 65		

Table 39.—*The URBO series is a member of the fine, mixed, acid, thermic family of Aeric Haplaquepts. These somewhat poorly drained soils occur along floodplains within the Blacklands (MLRA-135) and Coastal Plain (MLRA-133)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.0	4.8	4.5	4.4
Phosphorus, extractable	p/m	17	11	10	6
Potassium, extractable	p/m	100	88	92	98
Sodium, extractable	p/m	63	79	98	124
Soluble salts	mmho/cm	26	29	59	48
Organic matter	%/wt	2.21	1.08	.48	.39
Cation exchange capacity	me/100 g	17	19	18	18
Exchangeable calcium	me/100 g	14.5	10.7	6.8	5.9
Exchangeable magnesium	me/100 g	1.9	1.8	1.7	1.6
Ca:Mg ratio		7.2	5.6	3.9	4.1
Base saturation	%	69	65	54	49
Sand	%/wt	23	25	24	26
Silt	%/wt	37	35	35	34
Clay	%/wt	40	40	41	40
Bulk density	g/cc	1.18	1.27	1.20	1.23
Moisture equivalent	%/vol	35	37	34	36
60-cm moisture	%/vol	42	41	38	40
15-bar moisture	%/vol	18	19	18	18
Usable water after drainage	%/vol	28	22	20	22
Total porosity	%/vol	56	52	55	54
Pore volume for potential drainage and aeration	%/vol	14	11	17	14

Table 39a.—*Species suitability and productivity on URBO soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A+	1-2	100- 80	91	80
Basswood, American		(2)	95- 75		
Cherry, black		(2)	95- 75		
Cottonwood, eastern	A	2	110- 90		89
Elms	C	2	75- 55		
Hackberry and surgarberry	C	2	90- 70		
Hawthorn	D				
Hickories (except water)	B+	1	95- 75	84	
Holly, American	C				
Honeylocust	C	2	85- 65		
Hophornbeam, eastern	D+				
Hornbeam, American	D+				
Locust, black	C				
Maple, red	B	2	90- 70		
Oak, cherrybark	B	1-2	115- 95	100	95
Oak, laurel	B	2	100- 80		
Oak, Nuttall	A	1-2	110- 90	108	90
Oak, overcup	B	1	95- 75	84	
Oak, post	C				
Oak, Shumard	A	2	105- 85	92	
Oak, swamp chestnut	B	2	100- 80		
Oak, water	B+	1-2	110- 90	96	91
Oak, white		(1)	110- 90		
Oak, willow	B+	1-2	110- 90	102	92
Pecan		(2)	100- 80		
Persimmon, common	B	2	85- 65		
Plum, flatwoods	D				
Sassafras		(2)	95- 75		
Sweetgum	A+	1-2	110- 90	90	
Sycamore, American	A	2	110- 90	105	
Tupelo, black	C	2	85- 65		
Tupelo, water		(2)	90- 70		
Walnut, black		(2)	95- 75		
Yellow-poplar		(2)	100- 80		

Table 40.—*The VICKSBURG series is a member of the coarse-silty, mixed, acid, thermic family of Typic Udifluvents. These well-drained, silty soils occur in floodplains and drainageways within the Silty Uplands (MLRA-134)*

Property	Unit	Soil depth in inches			
		0-12	12-24	24-36	36-48
Soil reaction	pH	5.3	5.3	5.4	5.4
Phosphorus, extractable	p/m	27	26	25	25
Potassium, extractable	p/m	63	56	50	48
Sodium, extractable	p/m	28	28	26	26
Soluble salts	mmho/cm	13	9	7	8
Organic matter	%/wt	1.55	.78	.70	.70
Cation exchange capacity	me/100 g	11	10	10	10
Exchangeable calcium	me/100 g	5.0	4.2	4.5	5.0
Exchangeable magnesium	me/100 g	2.2	2.2	1.8	1.9
Ca:Mg ratio		2.3	2.0	2.3	2.7
Base saturation	%	69	68	70	74
Sand	%/wt	13	15	13	14
Silt	%/wt	73	70	71	70
Clay	%/wt	14	15	15	16
Bulk density	g/cc	1.37	1.34	1.35	1.35
Moisture equivalent	%/vol	32	29	30	30
60-cm moisture	%/vol	43	42	41	42
15-bar moisture	%/vol	11	10	10	10
Usable water after drainage	%/vol	32	32	31	32
Total porosity	%/vol	48	50	49	49
Pore volume for potential drainage and aeration	%/vol	5	8	8	7

Table 40a.—*Species suitability and productivity on VICKSBURG soils*

Species	Management and occurrence	Suitability	Site index		
			Estimated range	Measured average	Converted from sweetgum
Ash, green and white	A	1	100- 80		89
Basswood, American	C	2	95- 75		
Beech, American	C				
Birch, river	C	2	85- 65		
Cherry, black	C	2	95- 75		
Cottonwood, eastern	A	1-2	120-100	114	101
Cucumbertree	C				
Dogwood, flowering	C				
Elms	C+	1-2	90- 70	75	
Hackberry and surgarberry	C	1	100- 80		
Hickories (except water)	C+	1	95- 75		
Holly, American	C				
Honeylocust	C	2	85- 65		
Hophornbeam, eastern	D				
Hornbeam, American	D				
Locust, black	C				
Magnolia, southern	C				
Maple, red	C	2	90- 70		
Mulberry	C				
Oak, cherrybark	B+	1	120-100	112	104
Oak, laurel		(2)	100- 80		
Oak, Nuttall	A	1-2	115- 95		102
Oak, overcup		(2)	85- 65		
Oak, Shumard	A	1	115- 95	101	
Oak, southern red	C				
Oak, swamp chestnut	B	1	100- 80		
Oak, water	B+	1	110- 90	107	100
Oak, white	B	1	105- 85		
Oak, willow	B	1	110- 90		98
Pecan	B	1	110- 90		
Persimmon, common	C	2	85- 65		
Prickly-ash	D				
Redbud	D				
Redcedar, eastern	C				
Sassafras	C	2	95- 75	80	
Sweetgum	A+	1	115- 95	102	
Sycamore, American	A	1	125-105	114	
Tupelo, black	C	2	85- 65		
Tupelo, water		(2)	90- 70		
Walnut, black	B	2	95- 75		
Yellow-poplar	A+	1	120-100	106	

Broadfoot, Walter M.

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Tables present descriptions and properties of 40 important Midsouth soils and show management suggestions, occurrence, and suitability ratings of species.

Additional key words: Site index, growth potential.